

BEDFORD COLLEGE FOR LADIES, 47 and 48, BEDFORD-SQUARE.

The CLASSES will BEGIN for the Session, 1863-64, on THURSDAY, October 15th.

Fees to New Pupils.
Students, 22. 1s. a Year, or 21. 8s. a Term. Entrance Fee, 11. 1s. To Pupils attending One Class only, meeting twice a Week, 21. 8s. a Term.
To Pupils attending Two or more Classes—For the First Class, 21. 8s.; for each additional Class, if Twice a Week, 11. 1s. 6d.; if Once a Week, 11. 1s. a Term.
Instrumental Music, 31. 3s. and 21. 2s.—Calisthenic Exercises, 11. 1s. a Term.

The SCHOOL for PUPILS above Eight Years of Age will RE-OPEN on THURSDAY, October 1st. The Fees are 21. 8s. a Term for Pupils under, and 21. 6s. for those above Fourteen.
A few Pupils for the College are received as Boarders.
Prospectuses may be had at the College.

JANE MARTINEAU, Hon. Sec.

ST. BARTHOLOMEW'S HOSPITAL AND MEDICAL COLLEGE.

The WINTER SESSION will COMMENCE OCTOBER 1, with an Introductory Address by Mr. PEARCE, at 4 o'clock P.M.

LECTURES.

Medicine—Dr. Black and Dr. Kirkes.
Surgery—Mr. Lawrence and Mr. Cooke.
Descriptive Anatomy—Mr. Skey and Mr. Holden.
Physiology and General Anatomy—Mr. Skey.
Chemistry—Dr. Frankland and Dr. Odling.
Demonstrators of Anatomy—Mr. Callender and Mr. Smith.
Demonstrator of Morbid Anatomy—Dr. Andrew.

SUMMER SESSION, commencing May 1, 1864.

Material Medica—Dr. Farre.
Botany—Dr. Harris.
Forensic Medicine—Dr. Martin.
Midwifery—Dr. Greenhalgh.
Comparative Anatomy—Mr. Callender.
Practical Chemistry—Dr. Frankland and Dr. Odling.

The Hospital contains 650 Beds, and Clinical Lectures are delivered—On the Medical Cases, by Dr. Burrows, Dr. Farre and Dr. Black; On the Surgical Cases, by Mr. Lawrence, Mr. Skey and Mr. Pargett; and on the Diseases of Women, by Dr. Greenhalgh.
Collegiate Establishment—Students can reside within the Hospital walls, subject to the Collegiate Regulations. Some of the Teachers connected with the Hospital also receive Students to reside with them.
Seven Scholarships, varying in value from 20l. to 50l. are awarded annually. Further information respecting these and other details may be obtained from Mr. Howland, Mr. Callender, or any of the Medical or Surgical Officers or Lecturers; or at the Anatomical Museum or Library.

GUY'S HOSPITAL.—The MEDICAL SESSION

commences in OCTOBER. The Introductory Address will be given by F. W. PEARCE, M.D. F.R.S., on Thursday, the 1st of October, at 2 o'clock.

MEDICAL OFFICERS.

Physicians—G. H. Barlow, M.D., Owen Rees, M.D. F.R.S., W. W. Gull, M.D.
Assistant Physicians—S. O. Habershon, M.D., S. Wilks, M.D., F. W. PEARCE, M.D. F.R.S.
Surgeons—Edward Cock, Esq., John Hilton, Esq. F.R.S., John Birkett, Esq., Alfred Poland, Esq., J. Cooper Forster, Esq., Arthur Durham, Esq.
Obstetric Physician—Henry Oldham, M.D.
Assistant Obstetric Physician—J. Braxton Hicks, M.D. F.R.S.
Surgeon Dentist—J. Salter, Esq. F.R.S.
Surgeon Aurist—J. Hinton, Esq.
Eye Infirmaries—John F. France, Esq., Consulting Surgeon; Alfred Poland, Esq., Surgeon; Chas. Bader, Esq., Assistant Surgeon.

LECTURES—WINTER SESSION.

Medicine—Owen Rees, M.D. F.R.S., W. W. Gull, M.D.
Surgery—John Hilton, Esq. F.R.S., John Birkett, Esq.
Anatomy—Alfred Poland, Esq., J. Cooper Forster, Esq.
Physiology—F. W. PEARCE, M.D. F.R.S.
Chemistry—Alfred Taylor, M.D. F.R.S.
Experimental Physiology—Alfred Taylor, M.D.
Demonstrations on Anatomy—Walter Moxon, M.B., J. Bankart, Esq., Hilton Fagge, M.D.
Demonstrations on Morbid Anatomy—S. Wilks, M.D.

LECTURES—SUMMER SESSION.

Demonstrations on Cutaneous Diseases—S. O. Habershon, M.D.
Medical Jurisprudence—Alfred Taylor, M.D. F.R.S.
Material Medica—S. O. Habershon, M.D.
Midwifery—H. Oldham, M.D., and J. Braxton Hicks, M.D. F.R.S.
Ophthalmic Surgery—A. Poland, Esq., and C. Bader, Esq.
Pathology—S. Wilks, M.D.
Comparative Anatomy—F. W. PEARCE, M.D. F.R.S., W. Moxon, M.B.

Use of the Microscope—Arthur Durham, Esq.
Dental Surgery—J. Salter, Esq. F.R.S.
Botany—C. Johnson, Esq.
Practical Chemistry—
Demonstrations on Manipulative and Operative Surgery—T. Bryant, Esq.
Vaccination—J. Braxton Hicks, M.D. F.R.S.

The Hospital contains 60 Beds. Special Clinical Instruction given by the Physicians in Wards set apart for the most interesting cases.

Clinical Lectures—Medicine, Surgery and Midwifery—Weekly.
Lying-in-Charity—Number of cases attended annually about 2,000.

30 Beds for Diseases of Women. 30 Beds for Ophthalmic Cases.
Museum of Anatomy, Pathology and Comparative Anatomy.
Curator, S. Wilks, M.D.—contains 10,000 Specimens, 4,000 Drawings and Diagrams, a unique collection of Anatomical Models, and a series of 400 Models of Skin Diseases.

Gentlemen desirous of becoming Students must give satisfactory testimony as to their education and conduct. They are required to pay 40l. for the first year, 40l. for the second, and 10l. for every succeeding year of attendance, or 100l. in one payment entitles a student to a perpetual ticket.

Dressers, Clinical Clerks, Ward Clerks, Obstetric Residents and Dressers in the Eye Wards, are selected according to merit from those students who have attended a second year. A Resident House-Surgeon is appointed every six months from those students who have obtained the College Diploma.

Six Scholarships, varying in value from 25l. to 40l. each, will be awarded at the close of each Summer Session, for general proficiency.

Two Gold Medals will be given by the Treasurer—one for Medicine, and one for Surgery.
A Voluntary Examination will take place at Entrance in Elementary Classics and Mathematics. The three first Candidates will receive respectively 25l., 20l., and 15l.

Several of the Lecturers have Vacancies for Resident Private Pupils.
Mr. Stocker, Apothecary to Guy's Hospital, will enter Students, and give any further information required.
Guy's Hospital, July, 1863.

UNIVERSITY OF EDINBURGH.

Chancellor—LORD BROUGHAM.

Vice-Chancellor—Principal Sir DAVID BREWSTER, K.H.
Rector—The Right Hon. W. E. GLADSTONE.

The SESSION will be Publicly Opened on MONDAY, November 3, 1863, at Ten o'clock, when an ADDRESS to the STUDENTS will be delivered by the PRINCIPAL.

The CLASSES for the different Branches of STUDY will be opened as follows:

I. LITERATURE AND PHILOSOPHY.

| Classes. | Days and Hours of Attendance. | Professors. |
|---------------------------------|-------------------------------|------------------|
| Junior Humanity | Tues. Nov. 3. 12 & 2 | Prof. Sellar. |
| Senior Humanity | Tues. Nov. 3. 10 | |
| First Greek | Tues. Nov. 3. 9 & 11 | |
| Second Greek | Tues. Nov. 3. 11 | Prof. Blackie. |
| Third Greek | Tues. Nov. 3. 9 | |
| First Mathematics | Tues. Nov. 3. 12 | |
| Second Mathematical | Tues. Nov. 3. 10 | Prof. Kelland. |
| Third Mathematical | Mon. Nov. 9. 9 | |
| Logic and Metaphysics | Tues. Nov. 3. 11 | Prof. Fraser. |
| Moral Philosophy | Tues. Nov. 3. 12 | |
| Political Economy | Tues. Jan. 5. 9 | Prof. Macdonald. |
| Natural Philosophy | Tues. Nov. 3. 11 | Prof. Tait. |
| Rhetoric and English Literature | Tues. Nov. 3. 4 | Prof. Aytoun. |
| Practical Astronomy | Thurs. Dec. 3. 12 | Prof. Smyth. |
| Agriculture | Tues. Nov. 3. 4 | Prof. J. Wilson. |
| Theory of Music | Tues. Nov. 3. 10 & 12 | Prof. Donaldson. |
| Sanskrit | Tues. Nov. 3. 3 & 4 | Prof. Aufrecht. |

II. THEOLOGY.

| | | |
|---|-------------------|---------------------------|
| Divinity—Junior Class | Tues. Nov. 10. 10 | Rev. T. J. Crawford, D.D. |
| Divinity—Senior Class | Tues. Nov. 10. 11 | Rev. Wm. Stevenson, D.D. |
| History | Tues. Nov. 10. 12 | |
| Biblical Criticism and Biblical Antiquities | Tues. Nov. 10. 11 | Rev. Robert Lee, D.D. |
| Hebrew—Junior Class | Tues. Nov. 10. 9 | |
| Hebrew—Advanced Class | Tues. Nov. 10. 10 | |
| Hinduist | Tues. Nov. 10. 11 | Rev. D. Liston. |

| | | |
|------------------------|-----------------|----------------------|
| Law of Scotland | Tues. Nov. 3. 9 | Prof. Ross. |
| Medical Jurisprudence | Frid. Nov. 6. 2 | Dr. Douglas Macleod. |
| Civil Law | Tues. Nov. 3. 9 | Prof. Muirhead. |
| Public Law | Tues. Jan. 5. 3 | Prof. Lorimer. |
| Conveyancing | Tues. Nov. 3. 4 | Prof. M. Bell. |
| Constitutional History | Tues. Nov. 3. 4 | Prof. Innes. |

The Course will terminate before the Christmas Vacation.

IV. MEDICINE.

| | | |
|--|----------------------|---------------------------|
| Dietetics, Materia Medica, and Pharmacy | Tues. Nov. 3. 9 | Dr. Christison. |
| Chemistry | Tues. Nov. 3. 10 | Dr. L. Playfair. |
| Surgery | Tues. Nov. 3. 10 | Prof. Miller. |
| Institutes of Medicine | Tues. Nov. 3. 11 | Dr. Bennett. |
| Midwifery and Diseases of Women & Children | Tues. Nov. 3. 11 | Dr. Simpson. |
| Clinical Surgery (Mon. & Th.) | Thurs. Nov. 5. 12 | Prof. Syme. |
| Clinical Medicine (Th. & Fr.) | Tues. Nov. 3. 12 & 2 | Drs. Bennett and Laycock. |
| Anatomy | Tues. Nov. 3. 11 | Prof. Goodrich. |
| Natural History | Tues. Nov. 3. 9 | Prof. Allman. |
| Practice of Physic | Tues. Nov. 3. 10 | Dr. Laebeck. |
| General Pathology | Tues. Nov. 3. 4 | Dr. Henderson. |
| Anatomical Demonstrations | Tues. Nov. 3. 4 | Prof. Goodrich. |

ROYAL INFIRMARY at Noon, Daily.

PRACTICAL ANATOMY, under the Superintendence of Professor Goodrich. PRACTICAL CHEMISTRY, under the Superintendence of Dr. Lyon Playfair. ANALYTICAL CHEMISTRY, under the Superintendence of Dr. Lyon Playfair.

During the SUMMER SESSION, LECTURES will be given on the following Branches of Education:—
Botany—by Dr. Balfour.
Histology—by Dr. Bennett.
Medical Jurisprudence—by Dr. Maclellan.

Clinical Medicine.
Clinical Surgery—by Professor Syme.
Comparative Anatomy—by Professor Goodrich.

Anatomical Demonstrations—by Professor Goodrich.
Practical Chemistry and Pharmacy—under the Direction of Dr. Lyon Playfair.
Practical Anatomy—under the Superintendence of Professor Goodrich.

Argyrum—by Dr. Laycock.
Natural History—by Professor Allman.
Medical Psychology, with Practical Instruction at an Asylum—by Dr. Laebeck.

N.B.—Information relative to the Curricula of Study for Degrees, Examinations, &c., may be obtained on application to the Secretary, at the College.

A Table of Fees may be seen in the Matriculation Office, and in the Reading-Room of the Library.
By authority of the Senatus,
ALEX. SMITH, Sec. to the University.

September, 1863.

THE MIDDLESEX HOSPITAL MEDICAL COLLEGE.

THE INTRODUCTORY ADDRESS will be delivered by Mr. NUNN, Eight P.M., October 1.

The Middlesex Hospital, having an endowed Cancer department, contains in the aggregate 305 beds.
Five appointments within the walls of the Hospital, with free board and residence, are open to those gentlemen who have completed their education in the Medical College.

Written periodical examinations are held several times in the Session, the results of which determine the award of prizes.
The Governor's Prize, value 20 guineas; Two Prizes, value six guineas each; and Two Prizes, value four guineas each, are given for Reports in Clinical Medicine and Clinical Surgery.

The Clayton Prize is given for proficiency in Comparative Anatomy.
Names of the Medical Officers of the Hospital and of the Lecturers:—Dr. Stewart, Dr. Goodfellow, Dr. H. Thompson, Dr. J. Hall Davis, Dr. Murchison, Dr. Greenhow, Dr. Burdon Sanderson, Mr. Shaw, Mr. De Morgan, F.R.S., Mr. Moore, Mr. Nunn, Mr. Hulke, Mr. George Lawson, Mr. Southwell, Mr. Jones, F.R.S., Mr. Taylor and Mr. Heisch, Dr. Woodham Webb, Mr. Sibley, Dr. T. S. Cobbold, Dr. R. Irving, Dr. Cayley, Mr. D. Dewees.

General Fee for all the Lectures and Hospital Practice required by the College of Surgeons and Society of Apothecaries, 80l. 4s., payable by three instalments, falling due as follows:—First Session, 25l.; second Session, 25l.; third Session, 10l. 4s. The payment of the entire fee on entry renders the pupil preceptor. Fee for Dental Pupils, 40l. guineas.

Applications for admission are particularly requested to be made to Mr. D. DEWEES, Resident Medical Officer, who will also reply to further inquiries.

THE GHENT MEETING of the INTERNATIONAL ASSOCIATION of SOCIAL SCIENCE.

will commence on MONDAY NEXT, September 14. Tickets of Membership, price 10s., by the use of which a great reduction in travelling expenses is effected, may be had at 5, Waterloo-place, Pall Mall, S.W.

ROYAL COLLEGES of PHYSICIANS and SURGEONS, EDINBURGH.

WINTER SESSION, 1863-64.

The following COURSES of LECTURES on MEDICAL and SURGICAL SCIENCE, and also those delivered in the University, qualify for Examination for the Diplomas of the Royal Colleges of Physicians and Surgeons:—

CLASSES OPEN ON TUESDAY, NOVEMBER 3.

Surgery, 10 A.M.—Mr. Spence.
Surgery (4, High School-yard), 10 A.M.—Dr. P. H. Watson.
Surgery (5, High School-yard), 10 A.M.—Mr. A. M. Edwards.
Chemistry (School of Arts, Adam-square), 10 A.M.—Dr. Stevenson.

Practical Chemistry—Analytical Chemistry, 9 A.M. till 5 P.M.—Dr. Stevenson Macadam (at Surgeons' Hall).
Chemistry (8, Infirmary-street), 10 A.M.—Dr. Murray Thomson.
Practical Chemistry—Analytical Chemistry, 9 A.M. till 5 P.M.—Dr. Murray Thomson (8, Infirmary-street).

Chemistry (4, High School-yard), 11 A.M.—Dr. A. C. Brown.
Practical Chemistry—Analytical Chemistry, 9 A.M. till 5 P.M.—Dr. A. C. Brown (4, High School-yard).
Physiology, 11 A.M.—Dr. Sanders.

Medical Jurisprudence (Course commences on Dec. 3), 2 P.M.—Dr. Littlejohn.
Clinical Medicine (Royal Infirmary), 12 noon—Drs. Warburton Begbie, Sanders, J. Matthews Duncan, and Rutherford Halliday.

Clinical Surgery (Royal Infirmary), 12 noon—Mr. Spence, Dr. Gillespie.
Anatomy, 2 P.M.: Anatomical Demonstrations, 4 P.M.; Practical Anatomy, 9 A.M. till 5 P.M.—Dr. P. D. Handyside.

Practice of Physic, 3 P.M.—Dr. Rutherford Haldane.
Practice of Physic (4, High School-yard), 3 P.M.—Dr. Warburton Begbie.
Pathological Anatomy (to commence in February)—Dr. Grainger Stewart.

By Order of the Royal College of Physicians,

D. R. HALDANE, Secretary.

By Order of the Royal College of Surgeons,

JAMES SIMSON, Secretary.

THE INTRODUCTORY ADDRESS will be delivered by Dr. WARBURTON BEGBIE, on MONDAY, Nov. 2, at 11 o'clock.
Diseases of Children (Sick Children's Hospital)—Dr. Keiller.
Natural Philosophy (Three Months' Course, School of Arts), 12 noon—W. Lees, A.M.

PRACTICAL INSTRUCTION.—ROYAL INFIRMARY, 12 noon: Perpetual Ticket, at one payment, 100l.; Annual, 5l. 2s.; Half-yearly, 2l. 2s.; Quarterly, 1l. 11s. 6d.; Separate Payments for two years entitle the Student to a Perpetual Ticket. SICK CHILDREN'S HOSPITAL, Ticket, Three Months, 1l. 1s.; Perpetual, 2l. 2s. DISPENSARY VISIT—Royal Public Dispensary and New Town Dispensary, each, Six Months, 3l. 2s. PRACTICAL MIDWIFERY—Royal Maternity Hospital, Royal Public Dispensary, New Town Dispensary, Ticket, 1l. 1s. 6d. MEDICINE AND DIETETICS—Royal Dispensary, Ticket, Cockburn-street. PRACTICAL PHARMACY—Royal Public Dispensary, New Town Dispensary, Six Months, 2l. 2s. VACCINATION—Dr. Husband, Royal Dispensary.

FEES.—For the First of each of the above Courses, 2l. 2s.; for the Second, 2l. 2s.; for the Third, 2l. 2s. To those who have already attended a First Course in Edinburgh, the Perpetual Fee for that class is 2l. 2s. The Fees for the following Courses are:—Natural Philosophy, 3l. 2s.; Practical Chemistry and Practical Anatomy, 3l. 2s.; Anatomical Demonstrations, 2l. 2s., when taken along with Practical Anatomy, 1l. 1s.; Analytical Chemistry, 2l. a month, 2l. for three months, or 10l. for the session of six months.

During the SUMMER SESSION, 1864, the following Three Months' Courses will be delivered:—
Midwifery—Dr. Keiller.
Midwifery (4, High School-yard)—Dr. J. Matthews Duncan.
Medical Jurisprudence—Dr. Littlejohn.

Medical Medicine and Dietetics—Dr. Scoresby Jackson.
Clinical Surgery—Mr. Spence and Dr. Gillespie.
Clinical Medicine—Drs. Warburton Begbie, Sanders, J. Matthews Duncan and Rutherford Halliday.

Practical and Analytical Chemistry—Dr. Stevenson Macadam (at Surgeons' Hall).
Practical and Analytical Chemistry—Dr. Murray Thomson (8, Infirmary-street).

Practical and Analytical Chemistry—Dr. A. C. Brown (4, High School-yard).
Practical Anatomy and Demonstrations—Dr. P. D. Handyside.

Operative Surgery and Surgical Anatomy—Dr. P. D. Handyside.
Pathological Anatomy—Dr. Grainger Stewart.
Natural Philosophy—W. Lees, A.M.

Histology—Dr. Sanders.
History of Medicine—Dr. Warburton Begbie.
Venereal Diseases—Dr. P. H. Watson.

Surgical Appliances—Mr. Edwards.
Vaccination—Dr. Husband.
Diseases of the Eye—Dr. Argyll Robertson.

Insanity—Dr. Skene.
The above Courses qualify for Examination for the Diplomas of the Royal Colleges of Physicians and Surgeons of Edinburgh; the Royal Colleges of Physicians and Surgeons of London; the Royal Colleges of Physicians and Surgeons of Dublin; the Faculty of Physicians and Surgeons of Glasgow; the Apothecaries' Societies of London and Dublin; and the Boards of the Navy, Army, and Indian Medical Service.

The above Courses also qualify for the Universities of Oxford and Cambridge, and the Queen's University in Ireland, during the years in which residence is not required.

In accordance with the Regulations of the University of Edinburgh, four of the entire Medical Classes required may be attended under the above Teachers; and one of the four years of study required may be constituted by attendance, in one year, upon four of the above Medical Classes.

Students are eligible for English Poor-Law Appointments, two Three Months' Courses. The Regulations require that in this case the Fee for any of the above Classes shall be the same as that for the corresponding Class in the University. When Surgery and Clinical Surgery are taught by the same Lecturer, they do not qualify for the University of Edinburgh, but for every other Public Board.

Those who hold the education required for graduation at the University of London may be taken under the above Teachers.

Those who hold the Double Qualification of Physician and Surgeon from the Royal Colleges of Physicians and Surgeons of Edinburgh, are eligible for English Poor-Law Appointments equally with those who hold English Medical and Surgical Diplomas; and are, under the Medical Act, entitled to practise Medicine and Surgery in any part of Her Majesty's Dominions.

NOTICE.—The Regulation requiring the Preliminary Examination in General Education to be passed before the commencement of Professional Study will not come into operation this Session, but will be enforced at the next Session, except for those who can give a satisfactory reason for delay.

STEVENSON MACADAM, Secretary to the Medical and Surgical School.

XUM

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 12. Journal of the Anthropological Society of London, containing Papers by Prof. Marshall, Prof. E. H. Huxley, Mr. Bollaert, Mr. Winwood Reade, Mr. C. C. Blake; Reports of Discussions before the Society, &c.
 London: Tribner & Co. 60, Paternoster-row.

THE INTELLECTUAL OBSERVER: Review of Natural History, Microscopic Research, and Creative Science, No. XX., SEPTEMBER, 1863. Price 1s.

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English Botany; or, Coloured Figures of British Plants. Edited by John T. Boswell Syme. The Popular Portion by Mrs. Lankester. The Figures by J. Sowerby, J. De C. Sowerby, J. W. Salter and John E. Sowerby. Third Edition. Vol. I. (Hard-wicke.)

It is not simply a matter of coincidence that in 1789, when the States-General were convoked in France, and a political and social revolution was inaugurated, which broke down many of the artificial barriers opposed to rational progress, Jussieu should have published at Paris his 'Genera Plantarum,' arranged according to the natural system, and thus fired the first shot against the artificial system invented for the classification of plants by the great Linnaeus, and adopted in every part of Europe. The whole mind of France was imbued with the same feelings of dislike for all that was artificial, unprogressive and ossified, and every one tried to give vent to them within the sphere of his activity. Hence politics, social arrangements, arts and sciences, all exhibited the same signs of restlessness and disturbance. The whole contrasted strangely with the quiet conservatism observable in England, which became the more marked as the ferment became more intense; and, whilst it ultimately resulted in direct and active opposition to the new ideas, greatly tended to right the overbalanced mind, strengthen, purify and consolidate the new principles, and ensure a general adoption of those found sound and beneficial. Jussieu's revolutionary publication was answered in England by the issue of the great work by Sowerby on 'English Botany,' containing coloured plates of all the plants indigenous to Great Britain, and arranged according to the artificial system bequeathed by the Swedish naturalist. The great work, price fifty guineas, found sufficient support to be brought to a successful issue; and since then a second edition and a Supplement of several volumes have been brought out, also ignoring the system which Jussieu had advocated. A third and cheap edition is now in the course of publication, the first volume of which is before us; and here, at last, we find that the editor has completely broken with the past, has embraced fully the ideas on classification born during the stormy period of the first French Revolution, and is as far in advance of his time as a prudent and enlightened man should be. Before so complete a change could be effected, many a page had to be written, many a discussion to take place.

Twenty-one years elapsed before England's greatest botanist, Robert Brown, ventured to publish a *Flora*, not of his own country, but of New Holland, on the natural system; and that was never completed. It is said that the Latin of the work was bad, and that the critics in their censure being unusually severe disgusted the author with the labour. The story has been indorsed by De Candolle and Pritzl; but there is no foundation for it. There is nothing amiss in the technical Latin in which the work is written; and there were doubtless other reasons which induced Robert Brown to discontinue his self-imposed task; the encouragement he received at home in an attempt to spread the natural system was probably not very great, and that may have induced him to pause. Sir J. E. Smith was then the leader of botanical science in England. By purchase, he had become the

owner of the Linnean Herbarium, and he and his friends thought themselves pledged to uphold the tottering fabric of the artificial system of Linnaeus. They were little inclined to tolerate the heresy imported from France, together with the revolutionary ideas in politics, the cause of the mighty war in which England's strength was so strenuously put forward. They would admit no system which was so diametrically opposed to all they had hitherto taught, and they condemned the teachers as well as the teaching. However, notwithstanding open and avowed opposition, the natural system was making steady progress in our country; and in 1821 Samuel Frederick Gray, the father of our distinguished zoologist, ventured upon publishing 'A Natural Arrangement of British Plants,' in two volumes, in which, for the first time, all the vegetable productions indigenous to our islands were classified according to the new system. In many respects this work was before its time, and therefore quite beyond the grasp of those for whom it was written. But the author had also, like most of us, his crotchets; he changed the names of many plants on grounds which are even at this day considered insufficient; and he thus gave a plausible pretext to those who were only too glad to oppose the publication. The upholders of the old school were still in the majority; and though Gray was duly entitled to the highest honour which his botanical contemporaries could confer for a book which after the lapse of more than forty years is still worth studying, he seems to have met with nothing but ingratitude. It is even stated that a learned Society, the head-quarters of Linneanism in those days, blackballed him when he tried to become a member. We have heard it said that this story is a mere myth, and trust it may be so; but, if not actually true, it is so figuratively. Samuel Frederick Gray, and the principles he advocated, were not palatable to those who upheld a system which was simply the means to an end; the end being to find out the name of a plant—nothing more. Though its genera were natural, it gave no insight into their mutual relationship, led to the acquisition of a knowledge which had no value when acquired, and was, in fact, simply that sort of encyclopedic learning which requires to be connected by an intelligent thread before it can benefit its possessor.

In the same year that Gray published his account of the whole of the British plants arranged on the new system (1821), Dr., now Sir W. J. Hooker, adopted the less irritating plan of giving, as an Appendix to his 'Flora Scotica' (based upon the Linnean method), a synopsis of the Scottish plants according to the natural system. The honour, therefore, of first bringing out a *Flora* of the whole British Islands, entirely arranged according to the new system, is due to Mr. S. F. Gray. Dr. Lindley's 'Synopsis,' in which the same task is attempted, did not appear until 1829, eight years later. But upon Dr. Lindley fell all the trouble of securing for the system a firm footing, and appearing as its champion in all the battles that had to be fought before a method was laid aside which, to use his own words, did "certainly not tend to the advancement of science, or to an accurate knowledge of things themselves." With perseverance and energy, Dr. Lindley applied the new system to the whole vegetable kingdom; and from 1830 until now his general work on the subject has gone through numerous editions, and greatly tended to make botany popular in this country. In 1842, i.e. thirteen years after Dr. Lindley published his 'Synopsis,' Sir W. J. Hooker brought out his fifth edition

of the 'Flora Britannica,' entirely arranged according to the natural system; and in the following year Mr., now Prof., Babington gave us his excellent 'Manual,' cast in the same form; and since then no general account of our native plants written by men of note has appeared which did not reject the Linnean classification as totally unfit for the basis of a local *Flora*. Mr. Syme, in editing the third edition of Sowerby's 'English Botany,' has therefore done wisely to follow suit, and re-arrange all the plates, amounting to several thousand, according to the natural orders which they illustrate. In doing so, he has preserved the original number of each plate in Arabic figures, and added the new one in Roman characters, so that no confusion can ensue in quoting the old and the new editions of the work.

Mr. Syme's 'English Botany' will, when finished, be the most complete *Flora* of Great Britain ever brought out. Every species, either actually wild, naturalized, or cultivated on a large scale, will be admitted and represented by a coloured plate, accompanied by full technical descriptions, references to the most important works, and detailed accounts of the folk-lore, history, uses and properties of the different species. The two portions of the work have been written by different botanists, both excellent in their respective departments. Mr. Syme, one of the most accomplished and painstaking of our local botanists, has charged himself with the technical matter, while Mrs. Lankester, already favourably known by her charming book on the 'Wild Flowers worth Notice,' has undertaken the popular, or rather the non-technical, portion. The publisher may congratulate himself on having secured the services of these two writers. Their joint labours, as far as they are now before us, are executed with praiseworthy zeal and care; and assisted as the authors are, when occasion requires, by such men as Prof. Babington, Dr. Lankester, Messrs. Baker, H. C. Watson and the Rev. W. W. Newbould, we may fairly look forward to see this edition of 'English Botany' occupying the place of a standard work. The figures, which were originally engraved on copper, have all been transferred on stone, and those not quite up to the present requirements of science have either been altogether replaced by new ones, or, by a judicious introduction of details, brought up to the present state of knowledge. At the foot of every plate both the scientific and popular names have been placed,—another improvement upon the older editions.

The first volume, now completed, contains all the Ranunculaceae, Barberries, Water-lilies, Poppies, and Cruciferae. Mrs. Lankester has much to tell about the acrid, irritant, and vesicatory properties of the *Ranunculus* family: how the French beggars, availing themselves of those residing in the traveller's joy, or clematis, apply its juice to the skin to produce ulcers and excite compassion. And what an interesting object the wood of this creeper forms under the microscope; the vessels and cells being arranged in a radiate manner, allowing the air to circulate freely through them—a circumstance turned to account by our village boys, who use pieces of this wood to perfect themselves in smoking, when rattan-canes, the mysterious disappearance of which from school-rooms we could explain, though Mrs. Lankester may not, are inaccessible. The meadow-rue, and

The coy anemone, that ne'er unclothes
Her leaves until they're blown on by the wind,

the little mousetail, and crowfoots, and buttercups, are all highly acrid, with the exception of the water-crowfoot, which, in the neighbour-

hood of Kingswood, on the banks of the Avon, is so plentiful that the cottagers support their cows, and even horses, almost entirely with this plant, a quantity being collected every morning and brought in a boat to the water's edge, from which the cows eat it with great avidity; and so fond are they of this food that they are obliged to be restricted as to quantity. The popular belief that butter obtains its rich yellow colour from the cows eating various other kinds of *Ranunculus*—the buttercups or kingcups—seems to be destitute of foundation. Cattle, unless very hungry, will not touch the buttercups, and having eaten them their mouths become sore and blistered; but strange to add, though cows refuse to eat them, as also do pigs and horses, sheep and goats will. The acrid principle of the *Ranunculus* family attains its culminating point in the hellebore and the monkshood or aconite. The root of the latter has occasionally been mistaken for horseradish, and with fatal results, and the leaves have produced similar terrible effects. It was a species of aconite—perhaps the same as our indigenous one—that entered as an ingredient into the poison which the old men of Ceos were condemned to drink when they became infirm; and it is also conjectured to be the poison alluded to in the fable of the cup which Medea prepared for Theseus.

Our fair author fully enters into a consideration of the prejudice which English farmers entertain against the barberry-bush, the acid fruit of which makes an excellent preserve. It is asserted by them that wheat planted near one of these bushes seldom arrives at perfection or fills in the ear. Its influence in this respect is supposed to extend to some three or four hundred yards. The village of Rollesby, in Norfolk, where barberries abound, and wheat seldom succeeds, is known by the appellation of Mildew Rollesby. Doctors disagree in accounting for this phenomenon, or coincidence: some have attributed it to the pollen of the barberry, which is yellow, and has in some degree the appearance of rust; others have asserted that a little yellow fungus, which attacks the leaves of the barberry, may spread to the ears of wheat. More recent observers have laid all the cause of the mischief to the charge of a poor little insect which is very fond of the flowers of the barberry. But M. Broussonet, who paid particular attention to agriculture, declared the belief in the ill effects of barberry-bushes on wheat-fields to be totally devoid of foundation.

Of the Water-lilies—to the largest of which Sir R. Schomburgk has happily given the name of *Victoria Regia*—Mrs. Lankester has many interesting facts to relate. In order to enter fully into the fervid descriptions which some of our poets have given of these plants, it is necessary to see them in their favourite haunts on some quiet lake or river. Like the sacred lotus of the Nile, the flowers of the white water-lily rise and expand as the day advances and the sun gains strength, closing again at evening, sleeping, as it were, through the hours of darkness until awoken by the first rays of the morning sun. The yellow water-lily is almost as attractive, in its golden radiance, as its more modestly-attired and charming sister. "In golden armour glorious to behold," the blossom has a somewhat powerful smell, resembling ardent spirits; hence the not very poetical epithet of "brandy-bottle" is sometimes given to it.

But we must hasten on to the Poppies and their kindred. We have a good many of them in England now that botanists have agreed to unite the fumitories with them. The culture of poppies for the sake of their opium is, in our country, not on the whole an extensive or pro-

fitable operation: we must go to Asia for that. The most satisfactory experiment of this kind was made in 1823, in Buckinghamshire, by Messrs. Cowley & Staines, on a plot of twelve acres of land, which yielded 196 pounds of very fine opium, or about 16 pounds per acre. At the time, this was a remunerating produce; but the great reduction which has since taken place in the price of foreign opium would be fatal to such an undertaking now.

The next great natural order treated upon is that of the Crucifere, including sea-kale and cabbage, radish and horseradish, mustard and cress, scurvy-grass and wallflower, and a host of others useful to man; amongst them the woad (*Isatis tinctoria*) with which our ancestors painted their faces and bodies—blue being in Julius Cæsar's time the fashionable colour for faces, as pink is at present. In the days of the Roman invasion woad must have been plentiful in this country; but afterwards, probably from its extensive use, it became less common, and our Saxon forefathers imported it to dye their homespun cloth. Their name for it was "wad" or "waad," whence the English word in use for the colour itself. The plant is still cultivated, chiefly in Lincolnshire, on account of its colouring properties, and is used not so much to produce a blue colour on cloths as to form a base or mordant for a black dye. The cultivation of woad was formerly carried on by people who devoted themselves entirely to it; and as the crops of the plant are not successful for more than two years on the same piece of land, they never stayed long in one place, but, hiring fields in various districts, led a wandering life with their families, and gained their living by their crops. Now, however, many farmers grow woad as a rotation crop, the best kind being worth 20*l.* a ton. Woad was not the only plant associated with the fashionable toilette of our forefathers: the fumitory also had a cosmetic value long before the more pernicious preparations sold at the present day came into use. Shakspeare more than once speaks of the plant; and Clare (one of our old pastoral poets) thus alludes to its cosmetic virtues:—

And Fumitory too, a name
Which superstition holds to fame,
Whose red and purple-mottled flowers
Are cropped by maids in weeding hours
To boil in water, milk and whey
For washes on a holiday;
To make their beauty fair, and sleek,
And scare the tan from summer's cheek;
And oft the dame will feel inclined
As childhood's memory comes to mind,
To turn her hook away, and spare
The blooms it loved to gather there.

Whilst talking about cosmetics, let us not forget the watercresses, about the effect of which on the complexion popular opinion has evidently made up its mind. Even old Gerarde believed that eating them would restore the bloom to the faded cheeks of sickly young ladies; and he might have added that a walk to the running stream where they grow would enhance the effect of the remedy. Londoners, subject as they are to the effects of innumerable gas-lamps, smoking chimneys, late hours, and a limited supply of fresh air, would probably lose their complexion altogether if it were not for the vast supplies of watercresses daily arriving. The demand has so enormously and steadily increased, that the quantity produced spontaneously by our brooks and streams has long since been found inadequate, and large masses are now cultivated, as is also the case about Paris. The cultivation with us commenced about 1810, at Springhead Gardens, near Northfleet, where there is, or was until lately, an old Roman bath, with deliciously cool and clear water, and the cresses of Springhead still hold the first place in the market. The popular belief in the restorative power of watercresses is by no means a

groundless one. The most recent writers on diet have shown that in partaking of fresh uncooked vegetable food in the shape of salads and fruit, we are obtaining those salts of potash and other constituents so necessary to health. Watercresses are found to contain chloride of potassium and sulphur in considerable quantities, and iodine occasionally. No better vehicle for the introduction of these important substances into the system can there be than fresh, bright watercresses.

Our space warns us that we must part company with Mrs. Lankester and Mr. Syme. The two have succeeded in making the study of our native plants both instructive and interesting; and if the future volumes are equal to the one now issued—a fact that may be safely predicted—this great work will find a place wherever botanical science is cultivated and the study of our native plants, with all their fascinating associations, held dear.

The Gambling-Houses of Germany. No. I. Homburg—[*Les Tripots d'Allemagne, "Bibliothèque Satirique,"* par Alfred Sirven]. (Paris, E. Dentu; London, Nutt.)

ABOUT ten miles north of Frankfort-on-the-Maine lies Homburg on the hill, nestling amid the forest-clad spurs of the Taunus range. This well-built little town has the honour of being the capital of a land a few square miles in size, and combines with the advantages which its quality as a Residency gives it the further merit of being possessed of excellent curative springs. Persons with diseased livers and deranged stomachs who visit these waters find, in addition to the pleasant landscape, a château with an extensive garden, promenades in the vicinity of the Kursaal, a pretty street called the Luisenstrasse, and a first-rate band, which plays the march from 'Tannhäuser' or the overture to 'Der Freischütz' while the guests imbibe the waters. But it is not to these sources of amusement, or even to the waters, that Homburg owes its reputation. The thing that attracts thousands on thousands to a town which is as quiet as death except during the watering-season is the board of green cloth hospitably spread in the Kursaal. M. Blanc has converted the capital of the Landgrave of Hesse-Homburg into the capital of hazard. Baden-Baden, in spite of M. Benazet, is but a star of the second magnitude, and Homburg outshines all the other gambling dens of Germany.

The bank is held by a company whose manager is the above-mentioned M. Blanc. In spite of the large sums which are expended in beautifying Homburg and its vicinity,—in spite of the very high rent which the Bath Commissioners claim, and in spite of the heavy salaries of the directors, croupiers and servants,—the dividend is rarely less than forty per cent. This enormous profit has a very natural cause. With a few rare exceptions, every player loses. Hence the croupiers do not find their equanimity disturbed, even should the bank be broken twice or thrice in the evening. On an occasion of this sort, M. Blanc remarked about the fortunate winner, "He belongs to us, as they all do; he will bring back what he has won, and will leave his skin in the bargain." When a gambler asked him whether he had better back the red or the black, the worthy humourist replied, "Back red or black, it is all the same; white (Blanc) always wins."

In addition to M. Blanc, who has the chief management as *Directeur Gérant du Conseil d'Administration*, there are a sub-manager and two other directors. One of the latter was formerly cook, and then for a long time a simple croupier.

His colleague died a short time back, and left a fortune of 20,000*l.* behind him. The substitute of the managing director commenced his interesting career as an actor, and took a company to the East Indies, with whom he opened a French theatre. To his surprise his performances did not meet with the necessary recognition either in Calcutta, Bombay or Pondicherry; and hence he was compelled to bid farewell to the Land of Palms. He took back with him a number of monkeys and other animals, and opened on the Boulevard du Temple in Paris a *café*, in the principal apartment of which room was made for a large cage with the Indian monkeys. The animals played their antics, while a pretended negro wench waited on the guests; and these novelties attracted numerous customers. When the public curiosity began to pall, the proprietor established a small lansquenet table, which, however, soon assumed such a character that the police interfered and shut up the house. M. N—— crossed the frontier after this cross in Paris, joined M. Blanc, and became his right-hand man.

Of greater importance even than these important *employés* is a shareholder intrusted with confidential duties. He manages and looks after the professors and tempters. What the latter are their name explains; they are pretty, reckless women, generally Parisian *lorettes*, whose business it is to seduce young men or old men to the gaming-table. The most notorious of these ladies is a retired French actress. While employed at a minor theatre, she was taken by one of her numerous gentleman-friends to Homburg. Here she made the acquaintance of a Frankfort Cressus, who, surprised by her boldness in punting, intrusted her with 30,000 francs, and she won 400,000. Trusting to her star, and deaf to sensible advice, she went on playing for the highest stakes, and was ruined in a few days. She then entered the service of the bank, and has since become one of the cleverest seducers of gamblers.

The "professor" is always a respectable-looking man, dressed after the last fashion, and has a title. He calls himself Marquis or Count, or, at the least, a Baron. He drives his phaeton, scatters gold around, and contrives to slip into high society. He has commonsense enough to recognize at a glance those whom he can attract to the table by deceptive calculations and falsehoods. The professor is in the regular pay of the bank, and receives special encouragement when he delivers up a rich victim. He is not merely a professor, but also a Greek, and is a first-rate hand at the trick known in the swindling language as the "snuff-box." He persuades unsuspecting players to let him stake for them, as he is luckier than they. When he has a pile of gold before him, he scratches his neck every now and then, and lets a louis-d'or glide under his coat-collar. Here he has a tube, down which the coin slides into a bag made in the lining of his coat.

Our extracts from the volume before us had better be restricted to the comic anecdotes about gamblers, for the tragic ones are too ghastly for the present season. For several years a Countess K—— carried on very high play at Homburg. She remained at the roulette-table the whole day through, covered nearly all the numbers with louis-d'or, and constantly lost. It is said that she annually sacrificed to the bank the sum of 8,000*l.* On one occasion she was left so high and dry that she was compelled to sell her carriage and horses. After losing for three years, her religious feelings were enkindled, and she hastened to Rome to obtain forgiveness of her sins. She received absolution, but on condition that she would give up play. To promise is easy,

but the difficulty lies in keeping the promise. The gambling mania gained the victory over the piety of the Countess. She returned to Homburg, and seated herself once more at the roulette-table. "I will no longer play for myself," was her mental apology, "but for the poor."

The gambling chronicles tell us of two brothers, poor Prussians, who played upon a calculation, and, as an exceptional case, won. As a rule, nothing leads to ruin more surely than playing on a system. The two Prussians, however, had something more in their favour than a mere calculation of recurring numbers and so on. They earned a livelihood at Frankfort by giving lessons; one was a teacher of languages, while the other imparted instruction in mathematics. While the first was paying his court to a young lady, the mathematician was watching the play at Homburg. At length the lover gained his ends; his lady love gave him her hand, and brought him a fortune of 10,000 florins. At this moment the mathematician brought forward the experiences he had acquired at Homburg. "Every morning," he said, "an attendant cleans the roulette machine with whiting, and is constantly obliged to press heavily on certain parts which take a polish with difficulty. Through this some spots on the brass are depressed in a manner imperceptible to the eye but palpable in its results. The rolling ball is diverted from its ordinary course by these invisible grooves; hence certain numbers are sure to win repeatedly during a day, while others never turn up."

The brothers proceeded to Homburg and began playing. The mathematician regularly made his appearance two hours earlier than his brother in the Kursaal, and noted down all the winning numbers, though without punting. Those which came up most frequently during the two hours were then backed by his brother. Their want of passion insured them success, for they were as cool and as calm as the bank. They won 1,000 francs a day. When this sum was attained, they infallibly left the green table, and did not return till the next morning. In this way they are said to have gained half a million of francs.

A Polish Count also believed in the existence of an infallible system, but had not yet discovered it. After losing a considerable part of his fortune in gambling, he invested the rest in Homburg Bank Shares. Every morning there was visible in the Kursaal a tall thin man with a long, red moustache, who from his gait, manner and face might have been taken for an Englishman, (thank you, M. Sirven!) but was, in reality, our Pole. He walked restlessly round the table and evidently wrestled with the temptation to punt. A professor of the species we have described noticed this restlessness, and at once based a speculation upon it. "I have an understanding with that croupier opposite," he said mysteriously to the Pole, "who knows the secret of making the ball roll so that red must win. Stand just here, and when you notice that the croupier takes a pinch of snuff and looks straight at you, stake 12,000 francs on red. Pay me 8,000 francs, of which I must give a moiety to the croupier and the rest is for yourself." The Pole hesitated, but finally accepted the offer. He proceeded to the indicated spot just opposite the croupier, and when the latter took a pinch and looked at him he staked the 12,000 francs on the red. He won, gave the professor the 8,000 francs and proposed to punt again. "No," said the swindler, "not again today, for it might attract attention." On the following morning the Pole was again at his post opposite the croupier, staked his 12,000

francs and lost them. He looked around furiously, but the professor had disappeared, and did not return. The croupier who, when he took a pinch, was wont to look straight before him, had not the slightest cognizance of the affair, nor had he received any portion of the 8,000 francs. It was a swindling trick which succeeded once, by accident.

Another "professor" did not earn so much who was aware that the bank likes to hush up any scandal with gold. He fastened a rope to a tree in the vicinity of a sentry, waited till some persons were coming along through the park, and hanged himself. There was a disturbance, the sentry hurried up, and the hanging man was cut down and recalled to life. All Homburg talked about the occurrence, and the bank administration at once sent 1,000 francs to the pretended unfortunate gambler. A couple of months later he hanged himself again in the same way and received other 1,000 francs, but with a hint that "he had better hang himself elsewhere in future."

During the play-hours a swarm of men may be seen round the Kursaal, who can be recognized as Shylocks a long way off. They are waiting for gamblers whose last gold coin the croupier's inexorable rake has drawn in. Such persons always believe they could win it all back if they only had a small sum of ready money. When a usurer of this sort knows a player to be safe, he discounts a little bill for him at cent. per cent., but if he does not know his circumstances he lends on pledges. This latter business is transacted in the open air. Every evening some player leaves the Kursaal, returns without breast-pin or rings, without watch and chain; stakes again, loses his last coin and rushes from the room. The pawnbroker does a roaring trade in this way. On a gem worth 1,000 florins, he will advance 300, and that only for a month. If the pledge is not redeemed in that period, it is sold. The Parisian *lorettes* carry to the Homburg Jews most of the ornaments which they have beguiled their admirers into buying for them. Some of these honourable ladies carry on pledging as a profession. One fine day they appear without jewelry at the drinking fountain, complain to some charitable soul that losses at play have compelled them to pledge their precious *souvenirs*, receive the money to redeem them, fetch the jewelry back—and pledge it again the same day! They share the profits of the transaction with Messire Shylock. Every autumn the Paris jewellers send their travellers to Homburg and buy up the unredeemed pledges. The Jew gains 200 per cent. by the transaction and the jeweller has no cause to grumble.

As a type of the common professional gambler we will select a man who, in February of the present year, became universally known through a scandalous trial. We allude to Garcia, the King of the French Greeks, and therefore called *Garciaopoulos*, the first of his name (according to Robert-Houdin, the first Greek detected was a man of the name of Apollon). Ever since he has been known in Parisian society his life has been the same. In winter he plundered the fashionable society of the City of the Seine by playing with clogged dice and packed cards, and in summer he proceeded to Homburg to lose his dishonestly-acquired money at the green board. Two years ago a turn apparently took place in his fortunes. He played one day from 11 A.M. till 11 P.M. with fabulous good luck. He began with a stake of 12,500 florins, the highest allowed at *Trente et Quarante*, and by four in the afternoon he had won 500,000 francs. At this point he asked leave of Blanc to exceed the limits of the stakes, and received it at once. From this moment

he staked 60,000 francs and for seven hours was the sole player. All the tables were deserted, the most eager gamblers merely looked on, and a perfect silence prevailed. Garcia broke the bank five times, there being 350,000 francs in it on each occasion, and when the Kursaal was closed at 11 P.M., he rose a winner of 1,750,000 francs or 70,000*l*.

The next morning Garcia went away from Homburg, after releasing all the gamblers imprisoned for debt. The shareholders saw him go with long faces; but M. Blanc only smiled and shrugged his shoulders in a *nonchalant* way, for he knew the demoniacal power of attraction which gambling exercises over lucky players. Garcia returned the next year and within a week had repaid the bank one million francs. He hurried to Paris, sold out another million, carried them to the Homburg bank, and within six days he was thoroughly cleaned out. Thus the millionaire returned to his old condition, and was again compelled to cheat in Paris during the winter, in order to try his luck at Homburg in the summer.

Garcia spent a part of last winter in Nice. When he returned to Paris he moved in the highest circles, was a Member of the Cirque Impérial, the Jockey Club, &c. On February 3, 1863, he invited another gambler, Calzado, to accompany him to the house of the Countess Barucci, where they would find some rich young fellows and plenty of high play. The "Countess" kept a salon in which fashionable and equivocal characters were accustomed to assemble. On this evening there were present a Prince Demidoff, a Duc de Gramont Caderousse, a M. de Miranda, a Marquis P——, a director of the Italian Opera, and a Sous-Préfet, as well as ladies who, in the report of the Criminal Court relating to the events of the night, are merely designated *femmes et filles*. The play was high, and for a time conducted honourably. When the gamblers, however, began to grow excited, Garcia quitted the room, and on his return proposed Baccarat instead of *Trente et Quarante*, at which they had hitherto been playing. Some of the visitors did not take part in it, and these noticed that Garcia secretly exchanged the cards lying on the table for others. The play began, and in six deals De Miranda had lost 126,000 francs to Garcia. The enormous amount saved him: the spectators declared Garcia a swindler. The exchange of the cards was alluded to, and Garcia was compelled to confess it, when one of the party brought the covers of some packs from the ante-room to which Garcia had retired for half-an-hour. The cheat now confessed that he had packed the cards he brought with him. He took to flight, scattering bank-notes around him; but his accomplice was seized and searched. Altogether 85,000 of Miranda's francs were recovered, and Garcia must have carried off 41,000 with him. The Court sentenced him to five years' imprisonment in default, and Calzado to eighteen months.

It need not be expected that the scandal served as a warning to the gamblers. Play produces a mental excitement, which is a necessity for men of a certain class. Let these play if they like, but the temptation ought not to be placed in the way of respectable persons who visit watering-places. The air of gambling-rooms is heating, and robs many a man of his senses. M. Sirven adds, that the director at Baden-Baden has received notice to quit, and M. Blanc will not be allowed to reap his harvest much longer when the Landgrave of Hesse-Homburg, now eighty years of age, closes his eyes. Unfortunately for our stern moralist, who, we suspect, has burnt his wings pretty severely at Homburg, and is "taking it out" in abuse, the mighty potentate of Hesse-Cassel is granting

fresh concessions every year; and it is not likely that his successors will be so virtuous as to resign the best part of their income for love of honesty. We hope they may.

Egyptian Mythology and Egyptian Christianity. By Samuel Sharpe. (J. R. Smith.)

It is difficult to see the exact object with which this book has been committed to the press. It is full of fancies, quibbles and mistakes. Its purpose is apparently to suggest that Christianity is a plagiarism. We have heard this joke before, and do not pretend to admire it. The other day we were asked to believe that Christianity is no more than a corruption of Buddhism; now we are invited to consider ourselves as indifferent worshippers of Isis. And this on the most flimsy grounds ever suggested by a man of learning. Thus, because on some of the Egyptian pictures, rings presumably of gold are being weighed, the ring being in this case supposed to indicate a rude form of money, therefore, argues Mr. Sharpe, the Christian wedding-ring, "the endowment" of the husband's "worldly goods" is an Egyptian custom. Because the priests of Philæ were wont to cast a piece of gold into the Nile whenever its overflow happened to be more bountiful than usual, so, according to our author, the Venetians, copying a custom we may feel sure they never heard of, annually "wedded the Adriatic" by casting a gold ring into that sea—nay, more, actually copied "the Doge's cap from the crown of Lower Egypt," at a period when any knowledge of Egypt, except of the seacoast and some small portion of the Delta, did not exist. In the same spirit, and with what appears to us equally an exercise of perverted imagination, we are asked to believe that the Christmas game of king and queen, the Twelfth Night amusements of the season of Epiphany, the Romanist Feast of Candles in remembrance of the Purification of the Virgin Mary, the shaven crown of the monk, and last, not least, the linen dress worn by the English clergyman during the service of the Liturgy, and the woollen when preaching, are copies of world-old Egyptian practices. Mr. Sharpe has doubtless read in his youth how the learned Mr. Bellenden Ker found all English proverbs in a mispronunciation of certain Dutch equivalents; and how another equally sapient gentleman, Dr. Pocock, derived, to his own satisfaction, every name in Greek antiquity, letter for letter, from Sanskrit words. Mr. Sharpe further tells us that "Christian Art owes much to Egyptian imagination. The Virgin Mary rising to Heaven standing upon a crescent moon very closely resembles Isis as the dog-star rising heliacally." What the latter may mean, we do not presume to say; nor do we think the public generally will be able to construe "rising heliacally" by any recognized canon of the English language or literature. The "Virgin" we may leave to take care of herself, with the simple suggestion, that a comparison of her with any star of the canine species is, to speak in the gentlest terms, unpolite. On a par with the above is the assertion that "the Greek word Abrasax is a corruption of the Egyptian *hurt me not*," which a scholar who presumes to translate the New Testament might at least have known has a wholly different etymology. We cannot affect surprise that such a theorist should believe that "Protestant Europe is even now struggling to throw off the graver errors of the Nicene Creed and the Atonement," and that Rome received from Egypt, fifteen centuries ago, these and doubtless many similar follies.

Mr. Sharpe commences his work with an account of the Egyptian gods, wherein we

notice several things, on which we presume Egyptologists will hardly agree with him. Thus he tells us that "Ra is the sun, or Amunra, the great sun,"—that "every Egyptian king bore the title of Zera, the son of Ra,"—that "this god was at times called Adon-Ra, from a word for Lord, known also in the Hebrew language,"—that, "in consequence of the confusion arising from the Egyptian guttural, the name of Chem or Ham is 'usually spelt THM,'—that the name of 'Isis or Isitis, the Earth,' 'is derived from SAT, to sow seed, like the Latin *Ceres*,'—and, lastly, that Osiris is derived 'from OSH, a decree, and IRI, to do,'—and means the Judge.

Whether such fancies as the above will be accepted by Lepsius, De Rougé, Brugsch or Wilkinson, we can have little doubt; but we may be sure no scholar but Mr. Sharpe will believe in the derivation of the Greek Rhadamanthus from Ro-t-Amenti, the *King of Hell*; or that, because Osiris is somewhere stated to have been born at Mount Sinai—what the Egyptians are said to have called Nissa—from this Nissa, "the god's Greek name Dionysus, which is the same as the Hebrew Jehovah-Nissi," was taken. We can only say that from such etymologies you may derive anything you please, and that neither the Horne Tookes of the past, nor the Bellenden Kers of the present age have hit on anything more likely to bring the true study of etymology into disrepute. We will only add, that, consistently with the above, Menes, the presumed founder of the Egyptian monarchy, becomes Minos,—"*Charo, silent*" is connected with the ferryman Charon and the river Acheron, over which he ferries the dead,—that "Hecate, the sorceress, one of the titles of Isis," is, therefore, given "by the Greeks and Romans as a name to their Queen of Hell,"—and, that the name of the Cabeiri "is derived from an Egyptian word KBA, *punishment*, and IRI, to do, with a similar manipulation to that we have already noticed in the case of Osiris. So, "the goddess Thmei, or *Truth*," becomes "the Greek Themis, or Goddess of Justice."

There is, indeed, no reasoning with a man who defends or utters such etymologies; we can only remit him to the company of the Valanees, Bethams, Beale-Postes, *et hoc genus omne*—who, we had hoped, were long since consigned to the tomb of etymological Capulets.

Mr. Sharpe has some curious notions about miracles, and what are, at least popularly, supposed to be miraculous appearances. Thus, finding on the wall of the Temple at Luxor some sculptures, said to represent "the miraculous birth of kings," he at once assumes that these pictures exhibit in stone a scene analogous to that described in the Christian Gospels. "In this picture," says he, "we have the Annunciation, the Conception, the Birth and the Adoration, as described in the 1st and 2nd chapters of Luke's Gospel; and, as we have historical assurance that the chapters in Matthew's Gospel which contain the Miraculous Birth of Jesus are an after-addition not in the earliest manuscripts, it seems probable that these two poetical chapters in Luke may also be unhistorical, and be borrowed from the Egyptian accounts of the miraculous birth of their kings." We can only say, that the picture does, no doubt, exhibit a number of figures to which the ingenuity of Egyptologists may give the explanation Mr. Sharpe has offered in the page preceding that from which we have given the above extract; but we, at the same time, feel that nothing short of the fervid imagination of our author could extract from the picture, the sense he has suggested for it.

Mr. Sharpe is fond of this notion, that the early chapters of St. Luke are unhistorical, for he tells us again, "Soon afterwards were added

to the Gospel of St. Matthew the first two chapters, giving to Jesus a miraculous birth, without an earthly father, chapters of which we have historic information that they formed no part of the original Gospel, and which receive no support from the Gospels of Mark or John, or from any of the Epistles." We confess, however, that we do not estimate very highly an opinion which reposes on no evidence whatever.

Like the Rev. Mr. Elliot, of "Apocalyptic" fame, Mr. Sharpe draws inferences from coins and gems; like him, too, he draws conclusions which are wholly at variance with those at which the practised student of either coins or antiquities would arrive. Thus, at p. 80, he gives the copy of a very common coin of Asia Minor, and especially of Ephesus, and gravely tells us that the serpent there depicted is "the enemy of the human race who introduced sin and death into the world." "This," he adds, "is the serpent of which we have seen the conquest in p. 45, the serpent of the 3rd chapter of Genesis which misled Eve, and the serpent of wickedness of the Gnostics." Again, because he finds a bull on certain coins attributed to Cyprus, he at once assumes that this is "the bull of Apis," a notion for which there is positively no numismatic evidence whatever. Lastly, on a copper Alexandrian coin of the eleventh year of Domitian, which possibly does represent a snake riding on a galloping horse, Mr. Sharpe discovers that the type "represents another vision of the Book of Revelation, namely, the Spirit of Death, in the form of a serpent, riding on the pale horse." Really it is useless to attempt reasoning down such fancies—when, however, he adds that "this" (i.e. the coin of Domitian) "was made after the Book of Revelation was written,"—we must imagine a most improbable thing, that this work of St. John was already circulating in Rome and had reached the Palace of the Cæsars, a fact which we need hardly remark is quite beyond proof, and which no numismatist would ever have dreamt of.

Days in Derbyshire. By Dr. Spencer T. Hall. With Illustrations. (Derby, Keene; London, Simpkin, Marshall & Co.)

For holiday folk who, instead of scouring the beaten tracks of the Continent in company with crowds of tourists, may wish to recreate themselves in pleasant parts of their native land, this volume by Dr. Hall will be useful and entertaining. It is a suggestive book; for Derbyshire is not a new subject with the author, and to avoid repetition he has omitted many particulars which a reader naturally seeks in a guide-book. On the other hand, its value as a book for general reading is increased by the absence of details, and those who like travelling without quitting their elbow-chair may safely intrust themselves to Dr. Hall's guidance. He leads the way into the Peak country,—that region of rugged nature and rustic folk whose dialect has varied but little since the days of the Conquest. In their quaint speech the philologist may discover many British and Saxon roots and trace their variations; many words prevail among them which are familiar in the hill-country of Yorkshire and Durham. The following may be taken as a specimen of the rustic talk. The author is inquiring for a lodging when old Jenny Wildgoose cries out—

"'Whu wants me?' A stranger, I answered, wanting lodgings. 'Heeh, mon! whu are ye? let's hae a look at ye!' Well, was my reply, I'm a man at present somewhat lonely in the world, wanting a home, and a kind old mother who will be very good to me, and accept a little kindness in return: dare you take me in?' 'Heeh, mon alive! I'm ber just a puir lonely old bodymysen, and know what it is both to want kindness and gie it: dun ye stay out o' neets,

and come home drunk?' Oh, no! there's not much danger of that, for I'm there or thereabout a teetotalter: what are your terms?' 'Six shillings a week, and find yersen, and they're two o'th' nicest rooms i' aw Derbyshire; and aw've got some o'th' nicest pictures in em, and th' best collection o' minerals yo'n e'er seen; an aw'n got th' front door made up to keep awth' beggars and riff-raff out; an th' finest rose-tree up th' house-end y'n ever seen; a good garden an' the best milk frae th' nicest cow i' aw'th neighbourhood.'"

A special charm of the Peak is the contrast between the high bleak moorlands and the dales by which they are so deeply furrowed. Many a pleasant day have we spent in rambling now up now down those curious recesses, each of which has its special character and charm, and traces of primitive manners. Dr. Hall merely mentions the upper part of Dovedale; but, as we have seen more than once, the route by the river-side from Hartington to the part of the Dale most frequented by visitors is by no means the most interesting. The savage aspect and abrupt turnings of the gorge known as Narrowdale are singularly impressive. There are parts of Wydale, too, left unnoticed by Dr. Hall, amongst which a wayfarer might live for a week with ever-increasing admiration.

As a favourable specimen of the author's style, and as embodying a touch of character and dialect, we quote a passage from the ramble up Edale. This dale, by the way, still preserves in its first syllable the sound of the Anglo-Saxon *ee* or *ea*, that is, *water*. Arrived within sight of the little hamlet of Grinesbrook, the rambler says:—

"What an old-world scene, watered by the winding brook and nursed by all the hills! That miniature old church, or chapel, with its tiny bell-turret; that small public-house by its side, with no other sign or name than that of 'The Chapel-house'; those grey old homes up the receding nook, with one other little inn; a school-house in which the town-trained schoolmaster seemed scarcely at home, and where one wee 'kept' urchin seemed as if he would have been more at home with Shennstone's 'Schoolmistress'; and the many-gabled house of more patrician style, that would have been a cottage almost anywhere else in the world, but which here, by comparison, might boast of the character of a mansion: how vividly the whole picture continues to live in the mind as at this moment I look there again for it, while writing! And then, the inside of that little public-house, kept by Isaac Cooper, who was also a cattle-dealer and grazier, farming 500 acres on the mountain that overlooked his lowly home. A character long to be remembered by us all was Isaac Cooper. Sitting in his parlour with its low mullioned window, getting our refreshment, we had him in to talk with and give us the information with which his shrewd and practical mind was well and wonderfully stored. And while we were so sitting, his daughter, a smart and comely young woman, who had evidently seen beyond the valley, came into the room, and began to draw a curtain across one part of the window. Now, up in that country, all women and girls are, without the slightest offence, called wenches. So Isaac, turning his face from the fire towards the window, asked in a somewhat brisk tone, 'What's th' wench about?' 'Why (was her reply), I'm just drawing th' curtain a little way: I was afraid th' draft might hurt the gentleman, as there's a broken quail,' meaning a broken square. This done, the father's eye still followed the daughter as she retired from the room, when in a tone and manner about midway between soliloquy and colloquy, he continued to talk:—'Ah, that wench! hou's been upsetting me, hou has! I went to a cattle-fair, t'other dey; an' I'd no sooner gone than hou mut go gadding away to Chapel-t'-Frith, among a ruck o' wenches; an' away they aw went to Liverpool wi' a special treyn; an' when I got back, everything ith' house had gone topsy-turvy: I niver sey'd things i' sich a wey sin' th' day I wor born! Mr. Marsland said I ought to be very severe with her for 't, and punish her well. Somebody or

other said I ought to pu' her ears for her; but (continued the old man in a more kindly and relaxing tone) I havena' spoken a word to her about it yet; for, yo see'n, it *doesna' do to get into a passion in a hurry!*' Grand old Isaac! it were well worth while to have found out thy little hostlerie in Edale, were it only to learn that lesson; nor do I think the kind daughter, who was so considerate about the 'draft through the broken quail,' will ever be the worse for thy gentleness and forbearance."

But we demur to the advice that the visitor should see everything, for even in the Peak there are things and places not worth the trouble of a visit. The vaunted Speedwell mine is nothing but a tunnel deep down in the heart of a limestone hill, along which you navigate in a boat till you arrive at a dreary cavern where nothing is to be seen but dismal rock by feeble candlelight, and where the roar of a waterfall in the darksome depths is held to be a sufficient reward for the voyage and the cost. And the famous Peak cavern itself will by no means repay an exploration, unless you be an enthusiastic geologist. The best part of that is its wide entrance in the huge cliff, on the summit of which stands the ruin of Peveril Castle. The only cave in England that recompenses an ordinary visitor is Ingleborough Cave, where stalactite and stalagmite make up a really wonderful spectacle.

The outskirts of the Peak present attractions of another sort—rock, wood and tillage. No prettier specimen of an English home could be found than Lea Hurst, which henceforth will rank among our remarkable places, for there, since her childhood, has been the home of Florence Nightingale:—

"I well remember her (writes Dr. Hall), in days gone by, visiting the cottages of the poor whenever illness was there, and doing all she could to soothe and bless the sufferers. There is one cottage by the road-side, and overlooking a good part of the Hurst and the scenery beyond, where, long before she became known to the world, a poor old relative of mine, a chronic invalid, delighted in nothing so much as talking of the way she visited and made inquiries about her without fuss or unwelcome freedom, and when any of the poor neighbours got hurt in the quarries or mines, she was always one of the first to offer them genuine help and solace."

From the Peak and its pleasant outskirts Dr. Hall conducts the reader to scenes around Derby, and a sketchy flight round the whole county. Derby itself possesses but little to interest a stranger, except an old church or two and the Arboretum. Through the metropolis of the shire it offers to the ear many a specimen of native Doric. "Fel'n the Darnt an' welly droon'd" we once heard spoken by a man who was telling that some one had fallen into the Derwent and was well-nigh drowned. And a by-passer of whom we inquired the name of an old church, opposite which we were standing, answered "Wawbus," by which he meant St. Werburgh's.

We cannot help remarking in conclusion that if the printer had taken more pains with the woodcuts the appearance of the book would have been materially improved; and that had its bulk not been increased by eighty pages of advertisements it would have been more acceptable than it is as a book for the knapsack.

Eulogium (Historiarum sive Temporis) Chronicon ab Orbe condito usque ad Annum Domini 1366. A Monacho quodam Malmesburiensi Exaratum. Edited by F. S. Haydon. Vol. III. (Longman & Co.)

Mr. Haydon has brought his labour to a happy close; supplementing his Malmesbury Chronicle by two continuations, one of which brings the history down to the year 1413, the other

to the year 1490. In his Preface, the editor points to the sources whence the monkish compiler derived his facts and stories,—many of which are old, and not a few registered and recorded for the first time in these Chronicles. The latter concern us more than the former; and among them we find registered as a gallant feat, the daring of one Colville, who, the night before Crecy, "ad excitationem militis alterius partis," three times crossed the river in face of the enemy, and returned unscathed. Again, in addition to what we know of the First Great Plague in England in 1348, when a fifth of the population perished, we find now first recorded a general sterility which still further diminished the population,—women and children being compelled to undertake field-work for want of ordinary labourers, and the quarter of wheat selling at twelve pence (*denarii*), with lack of many buyers.

Later we find a new way of contracting royal marriages, or rather of carrying on a royal wooing. Thus, in 1366, Edmund of Langley, the King's son, goes into Flanders, attended by the Bishop of Ely and others, to see the daughter of the Count of Flanders; and, "whether it might please Edmund to have her for wife, or the lady be content to take him for husband,"—but nothing came of it: and no wonder, for, as the old chronicler intimates, the young couple never had opportunity to confer with one another, either in private or in public, whereby love is kept warm. Edmund, Duke of York, married Isabella of Castile. Their son Richard, Earl of Cambridge, wedded with Anne Mortimer,—the grand-daughter of Edmund Mortimer, whose wife was Philippa, daughter of Lionel, Duke of Clarence,—that son of Edward the Third from whom the son of Anne Mortimer and Richard of Cambridge (the Richard, Duke of York, who fell at Wakefield) derived the legal claim to the Crown, which was contested by the descendants of the younger son of Edward the Third, Lancastrian John of Gaunt. See what results from forbidding a little liberty to young hearts! Had Edmund of Langley only been allowed to hold pleasant converse with the Flemish maiden, the feud of York and Lancaster might not have arisen, or it would have had totally different aspects from those which now belong to it!

A new point in the account of the Battle of Poitiers is, that, according to an eye-witness, it lasted an unheard-of time:—"In bygone time," he writes, "after the third or fourth or at most the sixth discharge of arrows, men could pretty well tell on which side the victory would be, but in this affair a single bowman, with deliberate aim (*cum providentiâ*), shot a hundred, and neither side as yet thought of yielding to the other!"

Turning from battles to bishops, the chronicler finds much to shock his feelings in the translation of prelates. In reference to the death of Radulph, Bishop of Bath, who was succeeded by Barnet, translated from Worcester, the chronicler breaks forth into indignant comment on the frequent changes which then took place in episcopal sees. Scarcely one of the bishops was satisfied with his benefice; dignities were purchased like wares, and prelates became the humble vassals of the Pope, and gave a fine name to a practice which was nothing but simony. "An ecclesiastical benefice," says the monk, "ought not to be purchasable for either price or petition, but obtained by the grace of the Holy Ghost alone."

Papal pretensions were just then not more insolently asserted than they were indignantly resisted. We have a case in point here, referring to Gregory the Eleventh, to whom the

Florentines were willing to pay tribute, but whose temporal sovereignty they altogether abjured. Upon this, the angry Gregory issued a Bull to all nations, decreeing that wherever Florentine merchants dwelt, their debtors should refuse to pay them their dues, and that they should be driven forth, under penalty of interdict to king and kingdom. This Bull, William Courtenay, Bishop of London, published at Paul's Cross and took for text of approving comment. The mayor seized the Florentines, and brought them before the King: "Are you my men?" asked Edward. The answer was in the affirmative. "Then, we will protect you," added he. The Chancellor, William de Wickham, summoned the Bishop before him, and that prelate, pleading the commands of the Pope as his authority for publishing a Bull without the royal consent, was bidden to choose between losing his temporalities and publicly revoking all he had said. With difficulty, he was allowed to speak by attorney; and a more impudent representative never ate words for his master at Paul's Cross. To those who had heard the Bishop speak on the interdict, the attorney maintained that his lord had never uttered a single word on the matter. "I am astonished," he added, "that you, who hear so many sermons here, should not better understand what is said to you!"

This eating of words was forced on other great men. In the Council at Westminster, in 1374, an attempt to uphold the temporal sovereignty of the Pope in England, was supported by the Archbishop of Canterbury and other eminent men, and as strongly opposed by the Black Prince, who compelled the Transmontanes to revoke their arguments, and so beat the Archbishop into a corner that on the Prelate remaining stupidly mute to the questions put to him, the Prince addressed him with a "Now, you ass, make some reply. It is to you we look for information!"

When Princes were rough-spoken, Parliaments, of course, were not nice of speech. The illustration, indeed, refers to a later period than that of the last incident; nevertheless, as a sample of parliamentary dignity, as the latter was understood, in 1401, we may notice, that on the Bishop of St. Asaph recommending Parliament to attend to the complaints of Owen Glendower, lest he should excite the Welsh to insurrection,—that august body came to the resolution that they did not care for such naked-footed buffoons as the Welsh!

In Henry the Fourth we do not look for courtesy, nor find it. Few things appear to have troubled him more than the conspiracies of those who believed King Richard to be still alive, and who were desirous of restoring him. If some of these plotters had not talked loosely to some London Delilahs, their project might have had a better chance of succeeding; but such hussies naturally betrayed them. The religious brethren held fast by the belief that the King was alive; and nothing is more singular than the interviews which Henry held with these men, the arguments that passed between them, and the self-possession of the accused contrasted with the lack of it in the King, who is so ready with "You are a liar!" and jumps with such alacrity to his conclusion: "By my head, thou shalt lose thy head!" Whereupon followed strange, sad, and bloody sights in London streets.

The History of England,—its State, its Church, and its People,—is being re-written in this and similar volumes. Their value cannot be too highly estimated; that value is, of course, increased when the volumes pass through such able hands as those of Mr. Haydon. We only hope that, at no distant period, the general

reader will come in for his share of pleasure and edification in these works, by translations made with discretion and published at reasonable prices.

The Holy Gospels translated from the Original Greek, &c., with Notes and Critical Appendix.

By G. W. Brameld, M.A. (Longman & Co.) THE Scriptures should be translated anew into English. It is time that they should be so rendered, and the work might be done thoroughly and well. Deficient as England is in Hebrew scholarship, there are a few well versed in the language of the ancient Jews, and competent to make a good version of the Old Testament from the original. As to the Greek Testament, the same difficulty scarcely exists, or does not exist to the same extent.

We have here another contribution towards a corrected version of the New Testament, professing to show the superfluous passages which have been expunged, the doubtful that have been bracketed, and to present the whole revised after the texts of critical scholars. The Preface alone is sufficient to convince the reader of the elementary character of Mr. Brameld's critical knowledge. The extent of his reading is also small. No value can be attached to the judgment of one who speaks so often in the superlative degree. Dean Alford is his *magnus Apollo*; though his edition of the Greek Testament presents a diplomatic text of no independent value. "Dean Alford's G. T. is likely to become the handbook of English students. It is a work evidencing a vast amount of patient investigation and careful analysis. . . . His last edition is a noble work." "Tischendorf is, beyond dispute, the first authority of our time on questions connected with the text of the N. T." "Dodridge's 'Family Expositor' exhibits an union of sound piety and sound sense which is as pleasing as it is rare. A Roman Catholic writer, Mr. Ormsby, has lately reproduced in a useful form the text of Cardinal Mai, and his notes exhibit proofs of elegant scholarship and much general reading." Bengel's 'Gnomon' is "a great work." The Rev. S. C. Malan has made an "admirable" translation of the ancient versions of St. John's Gospel. Other specimens of extravagant laudation might be given, showing an absence of discrimination—an inability to distinguish real from defective scholarship.

It is useless labour in Mr. Brameld to attempt to give the results of textual criticism in a new version to the English reader. Such a reader does not need it; nor is it likely to profit him. One Greek text should be taken and followed absolutely, without regard to others. That of Tischendorf, published in 1859, which is the best, might be adopted, and others safely ignored in a work of this kind, especially as they are of inferior value. Mr. Sharpe did well in translating from Griesbach alone, and the present translator should have consulted his version. He does not seem, however, to be acquainted with it. This excites no surprise, because Mr. Brameld is ignorant of many other books that would have greatly helped his work.

The marginal notes, together with those at the foot of the pages, seem to be worth little. The reader does not need Alford reproduced. He does not want Hammond, Whitby, Macknight, Doddridge, Adam Clarke, Olshausen, Lange, Bengel, and such like. Had the author studied the commentaries of De Wette and Meyer, with Tholuck's on the Sermon on the Mount, and Lücke's on John, he might have dispensed with all the rest. It appears, however, that he is indebted to the works of others translated into English, for the opinions of De Wette, Meyer

and Lücke. It is very singular, too, that he is ignorant of De Wette's German translation of the Scriptures—the best extant in any language. But this is not strange in one who cannot spell Scholz's name, who gives Lachmann's text as ed. Ster. Reimer, Berolini, 1846, omits all reference to the Codex Sinaiticus, ignores Buttmann's edition of the Vatican text, passes in silence Scholz's Griesbach, does not know Robinson's Lexicon to the New Testament, but has recourse to Schleusner or Liddell and Scott, having probably never heard of Wahl and Bretschneider.

A few specimens of the translation and notes must suffice:—

"And one certain young man was following him, clad with a sindon upon his naked body; and they laid hold on him; and he, leaving the sindon, fled [from them] naked."—(Mark xiv.)

"And they all condemned him to be liable to death. And some began to spit on him and to cover his face, and to buffet him; and the attendants took him with blows." (Ibid.)

"For out of his plenitude we all received, and grace in the place of grace."—(John i.)

"They answered him, We are an issue of Abraham, and have at no time been in bondage to any one."—(John viii.)

"Martha, the sister of the dead man, saith unto him, Lord, by this time he stinketh, for he hath been four days dead."—(John xiv.)

The verses are not distinguished or numbered.

The following are some of the notes:—

"The expression, 'eye of a needle' was in the East used to designate the side gate for foot passengers, close by the principal gate, through which camels were wont to enter cities.—Harmer, 'Obs.'"

—This is wholly incorrect.

"Note, to Peter, in connexion with Peter's previous declaration, see Dean Hook's 'Lectures on the Last Days of our Lord's Ministry,' on Matthew xxvi. 40.

"On the relation between this genealogy (Matthew i.) and that in St. Luke, and on the difficulties connected with the subject, see Bengel, Lange, Olshausen, Lord A. Hervey, in Smith's 'Dictionary of the Bible.' [Dr. Edersheim on Lange.]

"On the Temptation, see Lange, Olshausen, Meyer.

"The Lord lay upon a couch, leaning upon his left arm, with his head towards the table, and his feet turned outwards, towards where the servants stood. His feet were also bare, as he would have taken off his sandals. De Wette."

—This explanation is not De Wette's, but Wetstein's.

Michaelis said of Matthæi, that when the latter began his Greek Testament he was at least an age behind the rest of Germany in the knowledge of sacred criticism; of Mr. Brameld it may be said in like manner, that his knowledge of criticism is an age behind that which one should have who undertakes a work like his. He has no proper qualifications for the task, his book betraying the tyro in textual criticism. Though he decries our English version unduly, its fine, nervous Saxon element raises it far above his. Who would not prefer, "And I will pray the Father, and he shall give you another Comforter, that he may abide with you for ever, even the Spirit of Truth, whom the world cannot receive, because it seeth him not, neither knoweth him; but ye know him, for he dwelleth with you, and shall be in you. I will not leave you comfortless: I will come to you"—to this, "And I will pray the Father, and He shall give you another Comforter, that He may be with you for ever; the Spirit of the Truth, which the world cannot receive, because it beholdeth it not, neither knoweth it; but ye know it, for it abideth with you, and shall be in you. I will not leave you destitute, I am coming unto you"?

OUR LIBRARY TABLE.

The Reason Why: Physical Geography and Geology. With numerous Illustrations. (Houlston & Wright.)—We might well ask the Reason Why the author of the present compilation presents it to the public. There are elementary books on the topics selected so far superior to this one that it is quite superfluous. The compiler appears to have copied so closely from the various popular books on his chosen subjects, that he contrives to avoid the possibility of making mistakes. Once or twice, however, he speaks a word or two for himself, and then betrays his incompetency. Thus, in the Glossary he writes, "*Dip*, when a *strata* does not lie horizontally." At the least we have a right to common grammar in a glossary. The plan of placing texts of Scripture on the top of every page sometimes brings sacred words into very undesirable contrasts. What, for instance, can have induced the compiler to head a page which treats of the Patagonians, and contains a woodcut of the head of a Malay, with this passage from St. Matthew, "Except your righteousness shall exceed the righteousness of the Scribes and Pharisees"? Again, another page about whales and other fish is headed with the sacred words, "And I said, Oh that I had wings like a dove! for then would I fly away, and be at rest." Certainly there are flying fish, but whales are not of them.

Passion Flowers, Meditations in Verse. (Hatchard & Co.)—A volume of devotional verses which may be commended for their earnestness and sweetness, but the style of which is injured by an abundance of those hackneyed metaphors, which are only poetic phrases prosaically set.

The Poetical Works of Robert Young of Londonderry. (Guardian Office, Londonderry.)—The contents of this volume chiefly relate to the part played by Londonderry and other Irish towns in the Revolution of 1688. The themes with which the writer deals are therefore generally local, and there is nothing in their treatment to render them otherwise.

Kilsorrel Castle: an Irish Story. By the Hon. Albert Canning. 2 vols. (Chapman & Hall.)—Mr. Albert Canning may not hope to find the pleasures of authorship without drawback. The composition of 'Kilsorrel Castle' has doubtless been a source of enjoyment to the author; but he must make up his mind to miss the exultation of the literary novice who hears his first book praised in society, and is informed by his publisher that they must go to press with a second edition. The most inveterate novel-reader, confined by gout and foul weather to a country house, and anxious to kill time without the assistance of friends, would be unable to get through the first volume of this Irish story. The author's ability is less than his desire to arouse the terror of those whom he introduces to the rightful Lord Kilsorrel, his illegitimate brother, David Lindsay, the mysterious Lady Annova, and the murderer, David Lynch. The drama contains a bountiful supply of villains and scenes of bloodshed; but the machinery fails to accomplish the intended purpose. Faces quiver with emotion, gentlemen place white hands on burning brows, heroines are convulsed throughout their frames as though with spasms, and the excitable hero of the piece is again and again found "literally foaming at the mouth"—but all in vain. The reader, after wondering what it is all about and vainly endeavouring to discover and seize the thread of the story, throws up the task and the volume in despair, or falls asleep in the middle of the most thrilling and "literally foaming" chapter.

Fathers and Sons—[Pères et Enfants, par Ivan Tourguénief.] With a Preface by Prosper Mérimée. (Paris, Charpentier.)—In point of power this may be well considered as the best novel which till now has been given us by M. Tourguénief. The characters are traced with decision; there are some scenes which are irresistible in their deep and simple pathos. The Preface tells us that the tale has created a lively sensation in Russia; that neither the men of the past, nor the youths "of the future," are satisfied by the display of their strength and weakness here

made. If this be true (and it would be an unworthy suspicion to conceive the statement a mere reckless advertisement), the Muscovites of the present day must be as thin-skinned as our near relatives across the Atlantic, whose fixed idea is to flaunt a charmed life, a blank credit, and a reputation of immaculate justice, wisdom and liberality in the eyes of submissive Europe. Happily, we English are more callous. Our House of Peers did not "lynch" Mr. Thackeray because the demon of his story was one Lord Steyne—and our commercial gentlemen of London, not long since, at one of their anniversary dinners, welcomed the Author of 'Martin Chuzzlewit' to the chair, just as cordially as if he had not laid against them the fearful accusation of leading their much-enduring landladies a terrible life, owing to their preposterous expectations in the matter of gravity. There are three elderly men in the book, Nicolas Kiranof, the father of Arcade,—Paul, his bachelor brother, a sort of Russian Major Pendennis, loving neatness and luxury, and the maxims and principles of the "fine old gentlemen,"—and the father of Basarof, the Nihilist or freethinker; which last becomes, we scarcely know how, the most interesting character in the book. M. Tourguénief has resolutely denied him any charm. He contradicts and criticizes his elders; he lays down the law to the younger congregation who sit at his feet; he despises established usages; he has no soul for the things of imagination; he is in some degree a sensualist; his very system of negation is inconclusive, tending to no positive action for the reconstruction of society, after its superstitions, religious and moral, shall have been abolished. Not the slightest glimmer of a halo, we repeat, is thrown round him; and yet, like every person in the tale, we look for him, we listen to him. There is no difficulty in believing that, rude as he was, and not without a touch of Orson in his ways, he could engage the attention of so refined a woman as Madame Odintsof, and as much love as she had to give. There are few things in fiction better wrought out than the commotion excited by his return to his humble provincial home, and the deferential, oppressive affection of his parents, which becomes too importunate to be endured. His mother is touched with a master's hand. His death, too (possibly a novelist's necessity, as disposing of one with whom everything in life was so much at variance), will not be read without emotion. The other characters are slighter, but not less individual. A strong-minded lady, who cultivates science and philosophy in a bewildered way of her own, gives champagne breakfasts to students, and goes to a ball in dirty gloves but with a bird of Paradise in her hair, is expressly to be commended to the curious of her sex, who desire to see a Russian variety of the species. To conclude, though the tale, like its predecessors, is a saddening one, it is excellent as a work of Art.

Among Miscellaneous Publications, we must announce, *An Index to the Times, and to the Topics and Events of the Year 1862* (Freeman).—*An Account of Meteorological and Physical Observations in Eight Balloon Ascents*, by J. Glaisher (Taylor & Francis).—*Spiritual Wants of the Metropolis and its Suburbs, a Letter to the Laity of the Diocese of London*, by the Lord Bishop of London (Rivingtons).—*A Safe, Speedy, and Certain Cure for Small Pox* (Kent).—*Italy in 1848, a Supposed Conference between the late King Louis-Philippe, Monsieur Guizot, Prince Metternich, and Viscount Palmerston, with a Letter to the British Parliament on Colonial Military Expenditure*, by Arthur Kinloch (Stanford).—*A History of the Rise and Progress of the Art of Printing*, a Lecture, by J. Moore (Moore).—*Report of the Main Drainage Committee on the Tenders for the Metropolitan Sewage* (Brickhill & Smith).—*The Slavery Quarrel, with Plans and Prospects of Reconciliation*, by A. Poor Peacemaker (Hardwicke). and from Mr. Baillière, *M'Kinlay's Journal of Exploration in the Interior of Australia*.—*J. M'Douall Stuart's Explorations across the Continent of Australia*.—*Journal of Landsborough's Expedition from Carpinteria in Search of Burke and Wills*.—*Guide to the Land Law of Victoria*, by the Hon. Gavan Duffy, and *Otago as It Is*, by S. Wekey.

LIST OF NEW BOOKS.

- Ashworth's Strange Tales from Humble Life, 12mo. 1/6 cl. limp.
 Bell's Hope Campbell, 4th edit. fcap. 8vo. 3/6 cl.
 Bielefeld's Ballads of Uhland, Goethe, Schiller, &c., 12mo. 3/6 cl.
 Border and Bastille, by Author of "Guy Livingstone," 2nd ed. 10/6
 Boy's (The Miscellany, Vol. 1, 4to. 3/6 cl.
 Braddon's Eleanor's Victory, 3 vols. cr. 8vo. 31/6
 Bradley's Lessons in Latin Prose, 12mo. 5/6 cl.
 Brewer's Flora of Surrey, 12mo. 7/6 cl.
 Cesaris Commentarii Belli Gallico, Books 1 to 5, 12mo. 3/6 cl.
 Crowquill's Tales for Children, 1st and 2nd Series, 2/6 each, cl. gt.
 Demaus' Class Book of Scripture History, 12mo. 2/6 cl.
 First Steps in Drawing for Beginners, 4to. 5/6 bds.
 Glen's Public Works (Manufacturing Districts) Act, 12mo. 3/6 cl.
 Gronow's Recollections and Anecdotes, 2nd edit. cr. 8vo. 7/6 cl.
 Hoskin's Winter in Upper and Lower Egypt, 8vo. 15/ cl.
 India Civil Service Examination Papers, July, 1863, folio, 2/6 swd.
 Laurie's Entertaining Lib.: Defoe's History of the Plague, 1/ cl.
 Magnet Stories (The, Vol. 6, 12mo. 2/6 cl.
 Minutes of Wesleyan Conference, 1863, 12mo. 1/4 bds.
 Nightingale Florence on Sanitary State of Indian Army, 2/6 cl.
 Palmer's Promise of the Father, 12mo. 1/6 cl.
 Psalmist (The Instrumental Score, edit. by Novello, 4to. 10/6 cl.
 Reid's (Capt. Mayne Game of Croquet, 8vo. 2/6 limp cl.
 Rühle's German Examination Papers, 8vo. 2/6 cl.
 St. John's Red Queen, 12mo. 2/6 bds.
 Shadows of Truth, or Thoughts and Allegories, by G.M.C., 2/6 cl.
 Steven's Stowage of Ships, 3rd edit. 8vo. 8/ cl.
 "Stonewall Jackson," a Biographical Sketch, post 8vo. 2/6 bds.
 Thomson's Dictionary of Domestic Medicine, new edit. 7/6 cl.
 Walter's Genuineness of the Book of Daniel, 8vo. 8/ cl.
 Wood's Our Garden Friends and Foes, illust. post 8vo. 7/6 cl.

VENUS.

TELL me, thou many-finger'd Frost,
 Coming and going like a ghost
 In leafless woods forsaken—
 O Frost, that o'er him lying low
 Drawest the garment of the snow
 From silver cloud-wings shaken,
 And thro' bare boughs with strange device
 Weavest fantastic leaves of ice—
 Say, when will Adon waken?
 Lo, dawn by dawn I rise afar
 Beside Apollo in his car,
 And, far below us wreathing,
 Thy fogs and mists are dusky curled
 Round the white silence of the world,
 Like to its own deep breathing;
 But crimson thro' the mist our light
 Foameth and freezeth, till by night
 Snow-bosom'd hills we fade on,
 And the pale god, at my desire,
 Gives unto Thee a breath of fire,
 To reach the lips of Adon.

Tell me, thou bare and wintry World,
 Wherein the wing'd flowers are furled
 Like fairies darkly dozing,—
 O World, within whose lap he lies,
 With thy quick earth upon his eyes,
 In dim unseen reposing,
 Hush'd underneath the wind and storm
 Still rosy-lit in darkness warm—
 Are Adon's eyes unclosing?
 Lo, dawn by dawn I rise afar
 Beside Apollo in his car,
 Keen-pricking as we go by
 Sharp tiny rifts in ice and snow
 Where ice-drops roll and melting show
 Shapes for flowers to grow by!
 Wonderful creatures of the light
 Flutter above Thee, hanging bright
 Paint pictures Glen and glade on,
 And the pale god, at my desire,
 Sheatheth in cloudy snows his fire
 To reach the sleep of Adon.

Tell me, thou Spirit of the Sun,
 Radiant lock'd and glorious one,
 Strong, constant, unforsaking,
 Sun, by whose shadier side I sit,
 And search thy face and question it,
 Conferring light and taking—
 Thou whose eternal brightness throws
 The shadow-hours on his repose—
 Is my Adon waking?
 Lo, dawn by dawn I rise afar
 Beside thee in thy flaming car,
 Thou ever-constant comer,
 And, flashing in the clouds that break
 Around our path, thy sunbeams make
 A phantom of the summer.
 O breathe upon the Moon, that she
 May use her magic witchery
 When snowy hills we fade on,
 That, in the dark, when thou art gone,
 She speed the resurrection,
 And stir the sleep of Adon!

Tell me, O silver-wing'd Moon,
 That glidest to melodious tune
 Ice-sparkling pallid skies up—
 O Moon, that to the sunset gray,
 Drinking faint light that fades away,
 Lifest immortal eyes up,
 And walking on art thro' the night
 Troubled to pain by that strange light—
 When will Adon rise up?

Lo, dawn by dawn I rise afar
 Beside Apollo in his car,
 Imploping sign or token,
 But night by night such pale peace beams
 Upon his slumber that it seems
 Too beautiful to be broken!
 O gentle goddess, be not cold!
 But some dim dawn may we behold
 New glory hill and glade on,
 The leaves and flowers alive to bliss,
 And, somewhat pale with thy last kiss,
 The smiling face of Adon!

W. BUCHANAN.

THE NEWEST PARIS.

Paris, Sept. 1, 1863.

AFTER an absence of only a few months from Paris, he who knows the imperial city well finds new caprices, new phrases, new fashions, and—old books in new bindings. Privat d'Anglemont, albeit a Bohemian *pur-sang*, understood, I think, the Parisian character as developed by high and low, by the bourgeois of the Faubourg St.-Honoré, and the dandin of the Chaussée d'Antin, and the lion of extravagant tailoring, who airs his toothpick behind a hundred-and-fifty-guinea horse. The vanity, the folly, the wit, and what we should call emphatically, the swagger, of the few hundred men of all ages, who, talking, riding, lounging, and eating, drinking and playing between Tortoni's and the Bois de Boulogne, make up the Paris that is written about in *Figaro* and described in the romances of the *Librairie Nouvelle*, or the *Librairie Centrale*, were at the finger ends of the Prince of Bohemians. He understood the light side of his love. It was his belief that Paris was the centre of the civilization of the world; that her example was taken blindfold in all things, and that unfortunate folks born beyond the frontiers of France could resign themselves to their disgrace only by dint of copying with a slavish earnestness the manners and the *mise* of incomparable Lutetia. Her follies, to him, were worth all the greatneses of London, Vienna, Berlin and St. Petersburg. Her ever-changing *argot*; the rise and fall of her *lions* who spend their fortunes in two years, not in extravagances natural to youth, but in prodigious follies, for the sole delight of being the wonder of the Boulevards for two seasons; her sensations and manias, were the atmosphere in which Privat lived and died; a Bohemian of the Quartier Latin, or of the Café Leblond,—a universal, most pliable vagabond.

Poor Privat's contributions to the *Siècle* were spirited reflections of his hasty and errandless career. He tasted the sweets of Paris life, and ground his teeth against its sharp necessities, and laughed all the time, as became a child of Paris, who, by the way, was a child of St. Rose in the Antilles! His genius and his tastes were Parisian, however. His soul was on the Boulevards or by the Luxembourg. It was his delight to carry the last Paris slang word, or impertinence, or extravagance about, and bandy it lightly as the wash-leather balls are buffeted under the Tuileries chest-nuts. He was of the joyous band who are the delight of romance-writers and the despair of fathers and uncles. *Ce que c'est que la jeunesse!* the old gentlemen cry, sitting in the strait-laced, severe café, under the Palais Royal, whence Camille Desmoulins issued to address the angry mob, and inaugurate the Revolution. *Jeunesse*, it must be confessed, has gone a little mad in Paris. *Jeunesse* reads Dumas the Younger and *Figaro*, and the "Yellow Dwarf," and is pleased to glance at the free-and-easy morals pictorially developed in the *Journal Amusant*. A very serious gentleman of the old school, who has passed his life doing solid work, a well-informed, high-minded but not brilliant man, who loves the classics of his country and has made some sacrifices in an endeavour to spread the knowledge of them among his countrymen, said to me a few days ago, "It is frightful to contemplate, this *Jeunesse* of ours: smoking at the cafés; supping at the *Maison Dorée*; driving about the Bois de Boulogne; chaffing, and snapping jewelled fingers at every honourable relation of life; ignorant as a *chiffonnier*—with Shame, in an India shawl, on its arm. I look at the noisy, gaudy

crowds, laughing along the asphaltum, and wonder what the next generation will be. What can it be?"

That which is new in Paris at this moment is *le Sport*. Not the sport of the field: the healthy morning on the breezy moor, the manly stride after the deer; no, the sport that is added to the other vices of the Boulevards is the low gambling over horseflesh which has long been seen at the public-house doors of England. *Jeunesse*, not having vices enough, has taken to betting. The *lions* have taken to keeping studs. The Duc de Morny counts his seventy racers and his English trainer. Whether the Caderousses lead, the little *employés* of the Admiralty or War Office must follow. They who cannot drive in a tandem, follow in a *coupé*, but all go the same route. "We are a race of monkeys," said lively Privat; "we cannot be ourselves; we must imitate our neighbours of the north or of the south, or we must imitate one another." Here follows a bit of profound observation: "Abroad, in England, for instance, a man is esteemed according to his character as a *humorist*, that is, according to his dissimilarity from his companions!" The *mode* is not so easily set in London as it is in Paris; but we are not so completely *humorists* as the French Bohemian paints us. Sport, in other words betting, and an affected knowledge of horses, is, however, thoroughly established in Paris. The head goose has turned his empty noddle towards the race-course, and the flock is following. The *gentlemen riders* are permanent figures in the Paris gallery of exquisites. The fop is learning to make his book. International betting has been fairly set on foot this year; and I am told, the Duc de Morny will not be content until he has won a Derby. The betters of Paris have their regularly appointed agents at our English races. The great betters will have their humble imitators; and now the day is not far distant when the wine-shops will be the headquarters of sweepstakes. Sporting is decidedly the new aspect of Paris. The race of horses will improve, and the human race will deteriorate. The profligate of Tortoni's has added the odour of the stable to his attractions.

With this new incense about him, let me present the young man of fast Paris life (and there is little save fast life here) as painted by Privat d'Anglemont, who knew him well. I have taken up dozens of books that have appeared lately, and all of them tend to prove that Privat's canvas is not overcharged with colour. We read one yellow volume after the other, only to be astonished again and again at the people and things set coolly before the reader for his amusement. Virtue, it would appear, has found a hiding-place at last; and, at two o'clock in the morning, the reckless exquisites in the company of *ces dames*, are wishing her *bon voyage!* Privat writes of his beloved Paris: "At the present day people still like to be thought aristocratic, but they much prefer being considered rich. The love of money has destroyed in us all noble ambition; there are only a few madmen who now care to earn a reputation for the love of glory, and they are the mark for the ridicule of all their contemporaries. It is considered absurd to do anything for the sake of honour; honour neither gives us good dinners, good clothes, nor cheap pleasures, nor does it help to keep up appearances." To keep up appearances is the idea of the epoch. You may be a fool, a scoundrel, a wretch without house or home; you may do what you like, steal, murder; what matter? You will still be clever, rich, honest, magnanimous, if you know how to keep up appearances.

In France, the greatest evil that can befall a man is to be original. Originality almost amounts to insult. The original man has no chance. Endeavour to get a place for him, and the person to whom you apply will answer, "I should be delighted to do any service for you within my power. Command me in all things, but don't ask me to help this friend of yours. Why, my dear fellow, he is an original!"

Young gentleman, who aspire to the honour of sitting eight hours a day at an office-desk copying letters, and making reports under the eye of an insolent head clerk—if you wish to attain the object of your ambition, station yourself every day at the

window, watch every one who passes, notice their dress, their gesture; study people's way of speaking, borrow their favourite expressions, disguise your own tastes, check your imagination, become a mediocrity, and you will at once assure your future position: you will have preserved appearances.

Look around; is it possible to meet with originality? Every one has the same walk, the same clothes, the same *tournure*—the tailor makes every man alike: why should you be different from your neighbours? All the world is agreed that France is the land of good taste; that our women and our dandies are perfect in the art of dress. But from whom does taste emanate, since those who possess leisure and fortune enough to follow the fashion all dress alike? This year blue is the fashionable colour: all the world is in blue. Coats are worn short: coats are curtailed as if by enchantment.

Next year green will be worn; the waist may be unnaturally long, but the majority of Frenchmen will clothe themselves in green, with long waists, utterly regardless as to whether the costume suits—without judgment or reflection. It is the fashion; that is sufficient. It was but last year that the Boulevard was changed into an hospital for incurables. A few lively persons, wishing to play the Parisians a practical joke, made their appearance one fine day on the Boulevards dressed in redingotes borrowed from the wardrobe of Biccêtre. They became at once the fashion, and all the tailors were obliged to apply to the clothmakers of the *Assistance Publique* in order to procure the particular kind of cloth required to satisfy the singular taste of these customers.

"It was difficult to say whom this kind of garment became; certainly neither the short and fat, nor the tall and thin. In any case it was hideous: yet everybody aspiring to belong to the aristocracy of taste was *embécoté* by this spirit of imitation. It is therefore understood that if you wish to be neither a fool, nor a wit, nor a very young man, nor an original—any of these titles shutting the door in the face of all careers,—if you would neither think, nor judge, nor reason, nor invent, nor live for yourself: do as the world does; accept the slavery; bow your head to the tyranny, and all will be at once open to you—you will have kept up appearances. In France, no one makes a fortune in order to live in ease and comfort, and indulge in tranquil joys,—money is made for the purpose of emulating some other envied person, and to have the appearance of a man who knows how to enjoy his wealth. There is very little reality in this beyond the appearance; the proof is, that nearly all rich people are ridiculous and suffer from ennui."

Privat was a good-natured critic, when compared with some of his contemporaries. Let us hope that the rising generation are not so bad as they are painted: and that they can read better things than are to be found in the *Hampton*! A copy of this journal lies before me. I bought it on the Boulevards. It is openly sold everywhere. It is read in public—and I cannot even describe the grossness of its contents. Yet no voice is raised against it. The public is not scandalized. The censor of the press has nothing to say. He cares not what form vanity takes, provided it is not that of a politician. He is possibly pleased to see *mes-sieurs les journalistes* airing themselves in the little Boulevard papers—and content, if talked about.

Everybody is panting to be before the world—to be talked about, even for his follies or his vices, or both. Private life is invaded by the critic or *chroniqueur* without the least hesitation. Eugène Delacroix was turned to account by the gossip-mongers, before his body was laid in the earth. We had a description of his house, of his manner of living, and of his death and appearance after death. His last words made copy in the *Figaro*! We are told that his furniture was in the style of the First Empire; and that his home had a severe aspect. His dying words were a request that his eyes might be closed directly after death. He ordered his body to be embalmed. Had the writer known who was the painter's barber, and how many francs were in the artist's house when he breathed his last, the facts would have been served up for the Boulevard cafés. Here, however, is a point worth keeping. Delacroix exhibited a picture in 1831,

entitled 'Liberty guiding the People on the Barricades.' It was at once bought by the Government and thrust into the lumber-room of the Louvre, where it has remained to this day. This was a subject of great regret to him, and cured him of politics with the brush.

But the *chroniqueur*, mayhap, is not to blame—when he gathers materials at random, at a man's dinner-table, or by his death-bed. He pleases the public; and, so far as we can see, he pleases the people about whom he gossips. Parisian celebrities are not loth to sit for their portraits in any attitude, provided the portraits are seen. I take up a light paper, intended to be read over a Neapolitan ice, and I am informed that Mousset, Jules Janin, Les Léprieux, and other literary celebrities are *beaux mangeurs*! Hervé also is said to have a very pretty *coup de fourchette*. The author follows up his relations with an exclamation that it was always so, with literary men, as though *suprêmes* were always at the command of authors, and *cordons bleus* were ever the humble servants of the poet!

The latest gossip is to the effect that M. Edmond About is writing a Life of Voltaire, and that M. Arsène Houssaye is engaged on the biography of J. J. Rousseau. Molière appears to have no new biographer for the moment! Poor Dumas the Younger is reported to be in a bad state, and not likely to write again: so rumour whispers in this city, where rumour's tongue wags night and day. It is certain, however, that the pen of the author of the 'Dame aux Camélias,' has been idle in the inkstand of late.

B. J.

NOTES ON THE HISTORY OF PERSPECTIVE.

(No. VIII.)

I have a few additions to make to the notes which were published in Nos. 1771, 1773, 1774, 1776, 1777 and 1779. I shall refer to them by these numbers and by the numbers of the lines. Thus, (1776, 102) means the 102nd line of the article in No. 1776: the column has 89 (roughly, 90) lines, which will enable the reader who looks back to throw his eye nearly on the place required at once.

(1771, 187.) When I recalled the story of the Phœnician damsel I was not aware of the serious manner in which Newton received the legend. He says (*Chron. Emend. Opusc.* iii. 64), that it is highly probable that Nausicaa received the knowledge of the sphere from the Argonauts on their way home. The time was not come when the statement of a classical author could be treated with unbelief.

(1771, 214.) In speaking of the very remarkable early effort of perspective which is called the stereographic projection of the sphere, I should have noted that Ptolemy did not give the property of circular projection as true of all circles, but only of all *great* circles, and of small circles parallel to the projection. So far as is known, the perfect theorem was completed by Jordanus Nemorarius, who is placed in the first half of the thirteenth century, just before Roger Bacon, Peckham and Vitello. Who he was is not known: there are several of the name near his time; and one manuscript calls him a German. There are manuscripts yet remaining, according to Fabricius, of one Jordanus Philotechnus, who is supposed to be the same as Nemorarius: these manuscripts contain "quædam circa perspectivam." If perspective here mean optics, this use of the word is a little older than Roger Bacon. But if, as is not unlikely, the Latin of Fabricius be to bear a modern sense, then it is not impossible that we may yet see more of perspective from Jordanus, over and above his addition to Ptolemy (see Charles *Hist. Géom.* p. 516, and T. S. Davies, in *Leybourn's Repository*, Vol. v. Part 2, p. 143).

(1771, 301.) There is a passage of Cicero in the *De Oratore*, Book 2, ch. 87, in which he speaks "pictoris ejusdam summi ratione et modo formarum variatæ locos distinguuntis." This has been supposed to refer to perspective; had it done so, the notion of spaces (*loei*) being made distinct on a flat by drawing of forms would have been a happy idea. But it is just the reverse; a preceding sentence runs thus—"Etenim corpus intelligi sine loco non potest"; it is body which is distinguished by

place. Cicero is describing an artificial memory in which things suggest his topics to the orator, and their order of place suggests the order of mention. And he refers, not to painters in general, but to some one distinguished painter, who was, it seems, in the habit of distinguishing the towns which he painted by some figures which would suggest them.

(1773, 271.) Albrecht is often described as *Albertus*, which increases the probability that his work has been attributed to Albert Dürer. There is a very neat way of approximately dividing a circle into seven equal parts which I have traced through writers on perspective up to Albert Dürer, beyond whom I cannot carry it; I do not find it in books upon other kinds of practical geometry, though I am told it has re-appeared in a work of our own time. Half the line which joins the two intersections of the circles in Euclid's first proposition is very nearly the side of the inscribed heptagon: it is too small; but any one who would feel satisfied with 11. as composition for a debt of 11. 0s. 0½d. ought to be a trifle better satisfied with Albert Dürer's heptagon. An error of less than one inch in 40 feet is good drawing.

(1771, 40.) The earliest writers make such frequent reference to the old writers on optics, as if they were writers on perspective, that it is worth while to make a remark on Euclid, Vitello, and others. These writers have many propositions on the appearance of objects to the eye, announcing results which of course are also seen in correct pictures: as, for instance, that distance makes objects smaller. All these appearances are due, no doubt, to the character of the picture on the retina of the eye; whence, in a sense, Euclid and Vitello may be said to have given some laws of perspective. But neither has anything whatever to do with the representation of objects on a plane between the object and the eye.

(1773, 312.) There is one perspective machine which well deserves attention: it may be sometimes constructed, for aught I know, but knowledge of it is not common. It is the invention of Christopher Wren, a mechanist of great genius, better known to the world at large by what he did than by how he did it: it is described in the *Phil. Trans.* for 1669 (No. 45). The eye looks through a pinhole at the point of sight, and the hand carries the end of a pointer over the outline to be traced. If this pointer moved on a glass plane, it would trace out the picture; but no plane is interposed: the picture plane, with drawing-paper on it, is at the side, and the motion of the pointer, by a simple parallel-motion contrivance, is communicated to a pen or pencil. This is the only machine which I happen to have met with for continuous tracing of outlines: but I think I have heard of others.

(1776, 225.) There is a point about the Jesuit's perspective which I cannot elucidate; but I may note it for future inquirers. The two editions of this work are really only one: the three parts were published in 1642, 1647, 1649; and in 1651 a new title was given to the first part, with the style of a second edition. This work gives the name of Curabell, to the exclusion of Desargues, as I have already said, thereby justifying my inference that Dubreuil belonged to, or took part with, the opponents of Desargues. But in the English translation of part of the Jesuit's work, 'The Practice of Perspective.....by a Jesuit of Paris,' translated by E. Chambers, 3rd ed. London, 1749, 4to., the tables are turned. The name of Curabell disappears from the preface, and that of Desargues is substituted: all the other names remaining as before. And more than this, there are two chapters headed as describing the universal method of the Sieur G. D. L., who must be the Sieur Gerard Desargues of Lyons. There is nothing in the so-called second edition of 1751, from which these chapters could be translated. Here I must leave the matter, for those to explain who may find the true original. I find that Dubreuil does not receive what I should consider due honour in his own order: the Jesuits themselves think Pozzo their greatest writer on perspective.

(1779, 210.) Nobody, I said, of the time of Brook Taylor must be held to have known Desargues or Bosse without proof. I find that proof can be given as to Newton and two friends unnamed. The fol-

lowing is part of a letter from Newton to Collins (*Maec. Corr.* ii. 358); and it shows that poor Bosse was not always reckoned so very obscure. The letter was written in 1673, and refers to Heuret's work of 1670:—

"I received your two last letters, with Heuret's optics, which (not being so ready in the French tongue myself, as to read it without the continual use of a dictionary) I committed to the perusal of another, who gives me this account of it. That he is not so plain and methodical as M. Boss; that he takes too much pains in demonstrating many things, which are of themselves sufficiently obvious, especially to one a little versed in Euclid; that his reprehensions of M. Boss are usually groundless and frivolous, being sometimes for his omission of some lines in his draughts, as if done out of ignorance, which yet a candid reader would rather think omitted lest his schemes should be cumbered with too great a multiplicity of lines, especially since the drawing of them might be deduced from his precepts. . . . This, Sir, in short, is the account of him which I received from my friend, who esteems him a very good author, and one that thoroughly understands this science, yet of the two prefers M. Boss. I committed it also to the perusal of another friend, . . . but when he had looked upon two or three of his first propositions, he became prejudiced by reason of some greater obscurity in them than in those which M. Boss begins with, saying to me, that if he, writing more at large than M. Boss, did yet begin with more intricate propositions, he could not expect to find him in the rest of his book so clear and methodical as the other."

By the date, which, though not on the letter, is certainly 1673 or 1674, neither of the friends could have been Brook Taylor, who was then what in algebra is called — 12 years old.

A. DE MORGAN.

OUR WEEKLY GOSSIP.

As regards financial results, the Newcastle Meeting of the British Association has been very successful. The attendance of London, Oxford and Cambridge men was lower than usual; but the town and district made up more than all the loss arising from the absence of our scientific men. From the surplus fund the following grants of money have been made. To the Kew Committee, 600*l.* In the departments of Mathematics and Physics, 415*l.* has been awarded, that is to say, to Mr. Glaisher, Luminous Meteors, 20*l.*; Prof. Hennessy, Vertical Movements of Atmosphere, 30*l.*; Mr. Symons, Rainfall in 1862-63, 20*l.*; Prof. Williamson, Electrical Standards, 100*l.*; Mr. Griffith, Transmutation of Spectral Rays, 45*l.*; Col. Sykes, Balloon, 200*l.* To Chemistry, 40*l.* has been assigned:—Mr. Matthiessen, Cast Iron, 20*l.*; Mr. Dupré, Carbon under Pressure, 10*l.*; Mr. Gages, Mechanical Structure of Rocks, 10*l.* To Geology, 120*l.*; that is, to Sir P. Egerton, Fossil Contents of the Staffordshire Coal-field, 20*l.*, and to Prof. Phillips, Quantity of Coal, 100*l.* In the sections of Zoology and Botany, 170*l.* is given in the following sums:—to Prof. Allman, Hydroids, 10*l.*; Mr. Jeffreys, Dredge, 25*l.*; Mr. Jeffreys, Dredging, 75*l.*; Mr. Jeffreys, General Dredging Committee, 10*l.*; Prof. Huxley, Herrings, 10*l.*; Dr. Carpenter, Models of the Foraminifera, 25*l.*; Sir W. Jardine, Nomenclature, 15*l.*; Dr. Richardson, Nitrate of Amyle, 10*l.* In Geography and Ethnology, Mr. Crawford is the only recipient of aid from the Association; 50*l.* is given him for experiments on "Crania." Mechanics obtains 260*l.* in the following items:—Mr. Oldham, Tidal Observations in the Humber, 50*l.*; Prof. Rankine, Resistance of Moving Bodies, 100*l.*; Duke of Sutherland, Steam-ship Performance, 60*l.*; Mr. Fairbairn, Gun-cotton, 50*l.* To Mr. Askham, 50*l.* was voted. The total amount of grants is 1,715*l.*

The Very Rev. Dean Graves (President of the Royal Irish Academy), the Rev. Samuel Butcher, D.D. (Regius Professor of Divinity, Dublin), Prof. D. F. M'Carthy, Dublin, and the Very Rev. Dean Ramsay, of Edinburgh, have been added during the current week to the National Shakespeare Committee. We see by the Manchester papers that the idea has been started in that city of calling a

new park, which is to be opened next year, The Shakespeare Park. In Birmingham, a meeting of working men has been held, and a local committee formed, with a view to afford the labouring classes—in whom the love of Shakespeare is no less highly developed than in their more learned neighbours—an opportunity of taking their place in the national movement.

Mr. W. Buchanan has a volume of poems in the press, which will shortly be published by Mr. Moxon, under the title of 'Undertones.'

M. Berjeau, whose curious little book on 'The Varieties of Dogs' we lately noticed, is preparing a companion work to be entitled 'The Horses of Antiquity, Middle Ages, and Renaissance, from the earliest Monuments down to the Sixteenth Century.'

We have had occasion to make use of the Reading-Room of the British Museum for many years, with never-failing reason to acknowledge the courtesy and attention of the officials of all grades employed there. Of late, however, it has been our lot to find that the ordinary period within which a student can obtain a book from the Library is never less than half-an-hour, and on more than one occasion a whole hour has elapsed before some carefully-indicated volume reached us, impatient and eager to save time. It was understood, when the new Reading-Room was opened, that the time of supplying students with their materials would be greatly shortened compared with that which was customary on the old system. With regret we find that the reverse is the rule. Worn out of patience, we one day, while waiting for a volume, paced round the readers' desks to ascertain if their crowded state could account for the delay in our receipt of books. The radiating desks can accommodate about three hundred readers; at them were seated exactly one hundred and forty-seven persons, or less than half the number that might have taxed the arrangements of the establishment. This was within an hour of closing the Reading-Room, and when many readers would abstain from demanding books that could not be used on the current day. At any rate, the place was not half full; yet an hour and ten minutes elapsed ere we got the book in demand. Few students can afford to wait even half this time. Surely Mr. Panizzi can do something to render long delays the exception, and not the rule.

On Monday the 21st inst., being St. Matthew's Day, the Lord Mayor and Sheriffs will attend Divine Service at Christ's Hospital, Newgate Street, and will afterwards hear the orations delivered in the hall, according to annual custom. The programme will be as follows:—Latin Oration, 'On the Benefits of the Royal Hospitals,' by J. H. Newnum; English Oration, on the same subject, by J. H. Wylie; Greek Oration, on the same subject, by C. G. Load. To be succeeded by the following translations: from 'Richard the Second,' into Greek Iambics, by L. L. Sharkey; from 'Paradise Lost,' into Homeric Hexameters, by C. A. Fyffe; from 'The Field of Gilboa,' into Greek Trochaics, by Walter P. Farrer; 'The Soldier's Dream,' into Latin Alcaics, by B. Arthur; from 'The Lady of the Lake,' into Latin Elegiacs, by H. R. Hughes. There will also be delivered two original poems, one in Latin and one in English.

A benevolent lady, aided by some earnest friends, proposes to establish an Infanticide Prevention Society. These thoughtful persons have been struck by the frequent failure of justice in cases of child murder. There was, for example, in a recent case some rather startling elements. A woman was charged with the wilful murder of her child. The evidence was conclusive as to her maternity—the medical testimony was direct and clear that the child had been born alive, and that its life had been destroyed by drowning. It was proved that the prisoner had provided a pan-mug of water and had thrust the child into it. Yet the jury acquitted the prisoner. Such a miscarriage of justice, they urge, could only occur while the public mind is unawakened to the social enormity of this particular crime. "On this ground it will be a prominent feature in this institution to stimulate

a healthy national sentiment on this vital question—not by exciting a maudlin sympathy with guilt, even under the garb of desertion and suffering in the hour of travail, but by boldly confronting the dark crime of child murder." The evil is obvious, the remedy not so. We wish these benevolent persons every success in their efforts; but we may warn them that the task of awakening the public mind is no light one. A change of the Bastardy Law is only one branch of the great work which stands before these new reformers.

The whole of Hornsey Wood and the land lying between it and the Green Lanes and the Great Northern Railway, northward of the Seven Sisters Road as far as the New River, has been purchased under an agreement, the price to be settled by arbitration, for the formation of Finsbury Park. A more fortunate piece of foresight than this event shows it would be difficult to name.

Having already expressed an earnest opinion on the desirability of retaining for a public park some of the space of land yet remaining open in the south-eastern district of the metropolis, we rejoice to see that Bermondsey is bestirring itself in a matter so deeply its own concern. The Metropolitan Board of Works' Street Committee has recommended that a letter received from the Vestry of Bermondsey Parish should be referred back to the Committee, with instructions to negotiate for a suitable site, not exceeding forty acres in extent, for the park so much needed. The recommendation has been adopted by the Board, and we hope that ere long the thing may be done.

Prof. Tyndall sends us for publication some curious Alpine experiences of Mr. Robert Spencer Watson, and his party, in the region of the Jungfrau. The suddenness of the atmospheric changes will recall the similar observations of Mr. Whymper on the Matterhorn, recorded in our pages a fortnight ago. Mr. Watson says:—"On the 10th of July I visited the Col de la Jungfrau from the Eggisch-horn, in company with my wife and Messrs. John Sowerby and W. G. Adams of Marlborough College. We had with us as guides J. M. Claret, of Chamouni, and a young man from the Hotel. The early morning was bright, and gave promise of a fine day, but, as we approached the Col, clouds settled down upon it, and, on reaching it, we encountered so severe a storm of wind, snow and hail, that we were unable to stay more than a few minutes. As we descended, the snow continued to fall so densely that we lost our way, and, for some time, we were wandering up the Lötsch Sattel. We had hardly discovered our mistake when a loud peal of thunder was heard, and shortly after I observed that a strange singing sound like that of a kettle was issuing from my alpenstock. We halted, and, finding that all the axes and stocks emitted the same sound, stuck them into the snow. The guide from the Hotel now pulled off his cap, shouting that his head burned, and his hair was seen to have a similar appearance to that which it would have presented had he been on an insulated stool under a powerful electrical machine. We all of us experienced the sensation of pricking or burning in some part of the body, more especially in the head and face, my hair also standing on end in an uncomfortable but very amusing manner. The snow gave out a hissing as though a heavy shower of hail were falling; the veil on the wide-awake of one of the party stood upright in the air, and on waving our hands the singing sound issued loudly from the fingers. Whenever a peal of thunder was heard the phenomena ceased, to be resumed before the echoes had died away. At these times we felt shocks, more or less violent, in those portions of the body which were most affected. By one of these my right arm was paralyzed so completely that I could neither use nor raise it for several minutes, nor, indeed, until it had been severely rubbed by Claret, and I suffered much pain in it at the shoulder-joint for several hours. At half-past twelve the clouds began to pass away and the phenomena finally ceased, having lasted twenty-five minutes. We saw no lightning, and were puzzled at first as to whether we should be afraid or amused. The young guide was very much alarmed, but Claret, who is devoid of fear, and who had

twice before heard the singing (though without any of the other symptoms), laughed so heartily that we joined him. No evil effects were felt afterwards beyond the inconvenience arising from the burning of our faces, which, though we had no sun, were almost livid in hue when we arrived at the *Ægisch-horn*."

Mr. Charles Beach, the author of 'Andrew Deverel: the History of an Adventurer in New Guinea,' wishes to say in explanation, that the title given by him to his book was simply the name of the hero of the tale; and that the additional (and we must add, misleading) title was given to it by Mr. Bentley. Mr. Beach further says that he has been in New Guinea for the period mentioned in the work.

Messrs. Bacon & Co., the American map-dealers, have published a new 'Map of America, Political, Historical and Military,' with a sketch of England on the same scale, as a mere marginal illustration of the greatness of the Republic. If this juxtaposition of the two countries be meant as a bit of national brag addressed to Bunkum, there is no great harm in it; if it be meant as a serious means of comparing the two States, it is exceedingly dishonest. England, of course, looks very small beside her gigantic offspring; but, then, England alone is given, not Scotland and Ireland,—not even our poor little Scilly Islands. If the means of any judgment between the two were offered, surely we might have been allowed our Australian colonies, our Indian empire,—not to speak of our share, not a slight one, of the American Continents, North and South. Now the truth is, that British America, continental and insular, is about as large as the Federal and Confederate States. But no honest argument can be drawn from such comparisons. England, with which alone this map compares America, is but the heart of this empire. In other respects, this map has merit enough to deserve a word of praise; though even in matters of tabulation it is not free from error. For example, the district of Arizona is described as free in one place, slave in another.

The Social Science Congress will hold its Seventh Annual Meeting at Edinburgh, on the 7th of October. The President, Lord Brougham, will open the meeting with an address. The six following days will be devoted to the different departments in rotation: the proceedings to begin with an address from the President of each Section. The addresses will be delivered in the Free Church Assembly Hall; the business will be transacted in the Law Courts and Free Assembly Hall. The concluding General Meeting will be held in the Church of Scotland Assembly Hall, on October 14. A Working Man's Meeting will be held in the Corn Exchange, under the presidency of Lord Brougham, on the evening of the 9th, and *Conversazioni* on the evenings of the 8th, 9th and 12th respectively, in the University, Museum and Hall of the College of Surgeons, and in the National Gallery. The dinner will take place, on the 13th, in the Music Hall. The Scottish Academy of Arts has promised to make as large a collection of the works of Scotch artists as is practicable, to be shown free in the galleries of the Academy during the continuance of the Congress.

Knowing, as we do, how numerous are the articles of antiquity that, being treasure-trove, are lost to the world and the student through the want of some definite understanding of the law respecting property in them by the class of workmen into whose hands such things fall, we shall be forgiven for asking why some authoritative statement is not made on the subject. The recent cases at Hastings and Westminster are sufficient to indicate the risks to which treasure-trove is exposed and the popular opinion on the subject. The first might be avoided and the second enlightened by a notice of the sort proposed some time ago. Now the finder of a treasure turns it into bullion as soon, and as secretly, as he can.

EGYPTIAN HALL, Piccadilly.—On the 14th of September, and following days, W. TELBIN'S NEW MOVING DIORAMA of the HOLY LAND, EGYPT, SYRIA, and TURKEY, in illustration of H.R.H. the Prince of Wales' Tour in the East. From Sketches made by Mr. W. Telbin and Son during their special journey in those surpassingly interesting countries, com-

prising Views of Cairo, Philæ, Jerusalem, the Holy Sepulchre, Ford of the Jordan, Plain of Jericho, Dead Sea, Nazareth, Galilee, Mount Hermon, Damascus, Interior of a Turk's House, Baalbec, Beyrout, Street in Smyrna, Constantinople, and Bosphorus by Moonlight. With descriptive Lecture, from the Writings of Sharpe, Bartlett, Warburton, Kingslake, Bremer, Rev. J. M. Beller, Roving Englishman, &c., adapted and delivered by Mr. Arthur Matheson. Musical Arrangements, Vocal and Instrumental, including Selections from the Works of Handel, Beethoven, Mendelssohn, Rossini, &c., under the direction of Miss Fosborne. Instrumental Accompaniments arranged by Mr. D. Spillane. Every day at Three, concluding at Five; and Eight, concluding at Ten. Saturdays, morning representations only.—Balcony, 1s.; Area, 2s.; Reserved Stalls, 3s.; a few Sofa Stalls, 5s. each; Private Box, to contain four, 11s.—Tickets to be had at Mitchell's and Sams' Royal Libraries; Austin's Ticket Office, St. James's Hall; of the principal Music-sellers; and at the Egyptian Hall, Piccadilly.

SCIENCE

BRITISH ASSOCIATION.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

FRIDAY.

'On the Focal Adjustment of the Eye,' by Mr. B. S. PROCTOR.

'On the Star Chromatroscope,' by Mr. A. CLAUDET.—The scintillation and change of colours observed in looking at the stars are so rapid that it is very difficult to judge of the separate lengths of their duration. If we could increase on the retina the length of the sensations they produce we should have the better means of examining them. This can be done by taking advantage of the power by which the retina can retain the sensation of light during a fraction of time which has been found to be one-third of a second—a phenomenon which is exemplified by the curious experiment of a piece of incandescent charcoal revolving round a centre, and forming a continual circle of light. It is obvious that if the incandescent charcoal during its revolution was evolving successively various rays, we could measure the length and duration of every ray by the angle each would subtend during its course. This is precisely what can be done with the light of the star. It can indeed be made to revolve like the incandescent charcoal, and form a complete circle on the retina. When we look at a star with a telescope we see it on a definite part of the field of the glass; but if with one hand we slightly move the telescope the image of the star changes its position, and during that motion, on account of the persistence of sensation on the retina, instead of appearing like a spot, it assumes the shape of a continued line. Now if, instead of moving the telescope in a straight line, we endeavour to move it in a circular direction, the star appears like a circle, but very irregular, on account of the unsteadiness of the movement communicated by the hand. Such is the principle of the instrument employed by the author to communicate the perfect circular motion which it is impossible to impart by the hand. The instrument consists of a conical tube placed horizontally on a stand, and revolving on its own axis by means of wheels; inside this tube a telescope or an opera-glass is placed, by which, by means of two opposite screws, the end of the object-glass can be placed in an excentric position in various degrees according to the effect desired, while the eye-glass remains in the centre of the small end of the tube. Now, if we understand that when the machine makes the tube to revolve upon its axis, the telescope inside revolves in an excentric direction, during the revolution the star seen through it must appear like a circle. This circle exhibits on its periphery the various rays emitted by the star, all following each other in spaces corresponding with their duration, showing also blank spaces between two contiguous rays which must correspond with the black lines of the spectrum. The instrument, in fact, is a kind of spectroscope, by which we can analyze the light of any star, study the cause of the scintillation, and compare its intensity in various climates or seasons and at different altitudes.

'On Transmutation of Spectral Rays,' by Dr. AKIN.—The author, for simplicity of reference, said he would, for his present purpose, call the rays of the middle or luminous part of the solar spectrum "Newtonian," the least refrangible invisible rays of heat, after their discoverer, "Herschelian," and the most refrangible invisible portion,

also after their discoverer, "Ritterian." This last portion of the spectrum Prof. Stokes had traced to an almost unlimited extent. The author then gave a sketch of Prof. Stokes's discoveries as to fluorescence, and the substances he had found capable of producing this effect, and observed upon it that the facts as yet noticed by Prof. Stokes only exhibited a degradation of the refrangibility of the rays, that is, from the Ritterian to the Newtonian, or from a higher part of the Newtonian to the less refrangible part of it. Now, the author conceived that the action of carbon and lime rendering the strongest heat of burning hydrogen luminous were instances of the Herschelian rays being raised to the Newtonian, strongly illuminating part of the spectrum; and, as Prof. Stokes had termed the other influence fluorescence, Dr. Akin proposed to term this calcescence, from the power of lime to turn heat into powerful illumination. The author also drew attention to many facts which he considered similar, and suggested various lines of experimental research on the subject.

The ABBÉ MOIGNO exhibited and described M. Soleil's Telescoposcope, for illustrating the invisibility of light. It is well known to scientific men, although the general public do not sufficiently appreciate the fact, that light in itself is invisible unless the eye be so placed as to receive the rays as they approach it, or unless some object be placed in its course, from whose surface the light may be reflected to the eye, which will generally thus give notice of the presence of that object. Thus, if the strong beam of sunlight be admitted into a darkened chamber through a small opening and received on some blackened surface placed against the opposite wall, the entire chamber will remain in perfect darkness, and all the objects in it invisible, except in as far as small motes floating in the air mark the course of the sunbeam by reflecting portions of its light. Upon projecting a fluid or small dust across the course of the beam its presence also becomes perceptible. The instrument exhibited consisted of a tube with an opening at one end to be looked into, the other end closed, the inside well blackened, and a wide opening across the tube to admit strong light to pass only across. On looking in, all is perfectly dark, but a small trigger raises at pleasure a small ivory ball into the course of the rays, and its presence instantly reveals the existence of the crossing beam by reflecting a portion of its light.

'On the Newcastle Time-Gun,' by Prof. C. PIAZZI SMYTH.—After referring to the exertions of the British Association from its earliest years on the subject of accurate time-signals, and to many efforts in the same direction by citizens of Newcastle, the author traced the gradual rise of the time-ball system from its origin by Capt. Wauchope, R.N., to its full improvement, at Greenwich, under the present Astronomer Royal, whose admirable additions of "electric-trigger" and "clock-drop" opened up a possibility of improved accuracy and certainty, as well as a great extension in the distance which might intervene between the scientific observatory and the popular signalling apparatus, under which improved system, subsidiary time-balls have been dropped, and are still daily dropped from Greenwich, at Charing Cross, Deal, and Portsmouth. A time-ball had also been dropped at Liverpool from Greenwich, but the distance having been found too great to ensure regularity, it has since been withdrawn in favour of the time-ball worked by the local Observatory of Liverpool with eminent accuracy and success. In the mean time the Royal Observatory of Edinburgh, long since provided with excellent meridian instruments, and publishing its Observations, began a time-ball service, on the improved Greenwich system as to form of apparatus, in 1852; but finding that this did not satisfy all the requirements of the locality, the Observatory entered into the proposal by the public of Edinburgh for firing a time-gun, which was accordingly commenced in 1861, and has been continued ever since, being regulated by the same species of electric influence from the Edinburgh Observatory which controls the drop of the local time-ball there. The result of the comparison of the two systems, which has now been going on in Edinburgh for three years,

has been eminently in favour of the gun, which, besides all its peculiar advantages as an audible signal, available in all weathers, thick as well as clear, has been found to form a visible signal also, more easily seen at a great distance than the time-ball, and constituting a more sudden, instantaneous and unmistakable signal, than the gradual descent of the ball. These being the practical results of the actual trial, it is no wonder that Newcastle, on establishing a signal at all, has preferred a time-gun to a time-ball. The chief merit of bringing about this establishment in Newcastle-upon-Tyne was attributed to Mr. N. J. Holmes, Engineer of the Universal Private Telegraph Company, assisted, not only by the local establishments of that company in Newcastle, but by the possession of his friend Prof. Wheatstone's magneto-electric exploder, the most convenient and powerful electrical means of exploding distant charges of gunpowder that has ever yet been invented. The next most important service was rendered by the Electric and International Telegraph Company, who, in the cause of an improvement of time-signals, at once expressed themselves most ready to lend the use of their "through-wire," extending uninterruptedly between Edinburgh and Newcastle, a distance of 120 miles; they also most liberally, and at their own expense, established local wires to connect one end of their wire with the Royal Observatory, Edinburgh, and the other with the office of the Universal Private Telegraph Company in Newcastle, where the exploders are stationed; and whence exploding currents (liberated by the galvanic signal of the corrected clock of the Edinburgh Observatory) are despatched to produce ignition of the charge in the gun on the old Castle of Newcastle, and also that of a still larger gun on the Barrack Hill of North Shields. The original Edinburgh galvanic current is also further transmitted through a wire of the Magnetic Telegraph Company to Sunderland, where it liberates another exploder current for a gun just established in that important town. Three guns are thus fired in this part of the country by the electric current from the Edinburgh Observatory; and on a summation of the several small retarding influences which are experienced by the current in traversing the distance of 120 miles, and securing the explosion of the guns placed thereabout, it is considered that they amount to a smaller quantity than the one-tenth part of a second, by which amount the governing clock at Edinburgh is made to send the current too soon. In this manner the Newcastle guns are by no means behind the Edinburgh gun itself; and the principle of time-guns is extending so rapidly, that arrangements are now almost complete for firing two guns in Glasgow and Greenock, also by electric signal from the Edinburgh Observatory, making six guns fired from that scientific and chronometric centre of North Britain.

'On a Printing Telegraph,' by Prof. D. E. HUGHES.—The Hughes Printing Telegraph Instrument, exhibited and described by its inventor, claims this peculiar advantage over any other printing telegraph which has been described, that it requires but one electrical wave for each letter which has to be transmitted, whereas Morse's printer, Wheatstone's needle, Bain's chemical, and the dial, or step-by-step letter-printing telegraphic instrument, depend either upon the number and duration of different signals to produce the letter intended, or upon a certain number of signals, each requiring an electric wave to produce only one letter. For the Morse an average of four waves is required for each letter, and the dial requires seven. The chief mechanical feature of this machine is the causing the almost mathematically synchronous and continuous revolution of two type-wheels, one at the transmitting, the other at the distant receiving or recording station, and causing any little difference that may accidentally occur to be corrected by the machine itself; first, at the commencement of work; secondly, on the printing of each letter as a message proceeds: so that when any given letter—for instance, A—is lowermost at one station, it is also lowermost at the other. By simple mechanical arrangements a current can be transmitted when any required letter

at the sending station is in this position. This current instantly, by detaching an armature, allows a hammer to strike a slip of paper against the corresponding letter of the type-wheel at the receiving station, and so prints the letter without stopping the type-wheel. It will be observed, that exact synchronism between the two type-wheels is absolutely necessary. Approximate synchronism is obtained by the adjustment of two vibrating springs in unison; and perfect synchronism is obtained by a small correction, produced, as each letter is printed, by the very act of printing. The type-wheel is then either hastened or retarded a little, as may be required, to bring the letter truly opposite the printing pad. The test of this is, simply repeating the same signal (suppose that of the repeat) several times at equal intervals. The means by which the machine corrects itself at each letter, or at the commencement of work, is by means of a correcting cam,—a solid wedge, pushed down into a similar hollow wedge,—one on the driving part, the other on the arbour of the wheel. The paper to be printed on is coiled on a reel, and is drawn forward by the machine, and pressed up against the letter to be printed by the electric wave that brings the required letter or number to its place at the under side of the revolving wheel. The mechanical motions are produced by the force of a weight as it descends acting upon a train of wheels; a small bell rings when this weight is nearly run down, and the assistant winds it up by simply pressing his foot on a treadle. There are twenty-eight keys, like the keys of a piano, each corresponding to a letter or mark, as, say, a full-stop, or to a number, at pleasure. These admit of fifty-six variations, so that the possibility of varying signals is nearly unlimited. When one of the keys corresponding to a letter is depressed, this brings a detent in contact with a pin corresponding to that letter on the circumference of the uniformly revolving type-wheel, stops it, and at the same time sends an electric wave to the distant station, which, by an electro-magnet detaching a similar detent, stops the same letter for the instant, and by a revolving cam brought up presses the paper against the type, the impression of which is thus taken at the distant station; the rising of the detent by the key rising to its place simultaneously stops the electric current, and each wheel again starts into motion at the same letter, as they had each been stopped exactly at the same letter, and so letter after letter is printed nearly as fast as the keys of a pianoforte can be moved. It was also pointed out that the instrument might be used as a Chromoscope; and tables showing its application to the measurement of retardation in submarine cables were contained in the Report. Several specimens of the printing were executed before the Section and handed to the members, the machine being worked for the week in the exhibition-room at the Central Exchange. The instrument is now employed between various large towns by the United Kingdom Telegraph Company.

'On Bonelli's Printing Telegraph,' by Mr. W. COOK.

A New Form of Syrene, exhibited and described by Mr. W. LADD.

An Acoustic Telegraph, exhibited and described by Mr. W. LADD.

An Electro-Motive Engine, exhibited and described by Mr. W. LADD.—The electro-motive machine exhibited and described by Mr. Ladd consisted of two coils forming a powerful electro-magnet, revolving on an axis parallel to the axes of these coils, and at equal distances between them. On the stand four pillars, forming coils, were planted in the circumference of a circle round the revolving electro-magnet, and at such a distance from it as just to permit its free motion. By a simple contrivance, similar to the commutator, the electric current was so transmitted and reversed as to make each of the pillar coils a magnet, with the pole it presented to that of the revolving coil as it approached it, of the opposite name, south or north, but the instant it passed, reversing it into one of the same name; thus, while advancing it is attracted, but the instant it begins to retire, repelled, and so a constant motive force is applied to keep it revolving. The engine exhibited was mounted with

bevel wheels, carrying an axle, on which a cord could wind up a weight of some pounds. It was also furnished with a friction break, by which its power, which was, even with only two Grove's cells, considerable, could be exactly measured.

'On the Distances of the Planets,' by Mr. R. S. BROWNE.

'On the Electrical Resistance and the Electrification of Gutta-Percha and India-Rubber under varying Pressures, extending to 300 Atmospheres,' by Mr. C. W. SIEMENS.—The pressures were produced by a powerful hydraulic press. Mr. Siemens found by experiment, the resistance of gutta-percha, or, in popular language, its insulating power, increased as the pressure increased, and the rate of increase was found to be greater the higher the pressure. At 300 atmospheres the resistance was nearly three times that observed at atmospheric pressure. When the pressure was removed, the resistance immediately fell to nearly its original amount, and after some time regained the original resistance exactly. The resistance of india-rubber, on the contrary, was found to decrease with an increase of pressure, but the rate of decrease tended to become constant; when the pressure was removed, a kind of rebound occurred, for the resistance immediately rose to more than its original amount, but after some time again fell to its first condition. It might be thought that this effect in india-rubber was due to the introduction of water into its mass under high pressure, whereas gutta-percha might be supposed to resist this kind of percolation. This view was, however, shown to be untenable; since, when a wire was first covered with india-rubber and then with gutta-percha, the change of resistance due to the increase of pressure was a mean between the results obtained with gutta-percha and india-rubber separately. The effect on the apparent resistance of the insulators by continued electrification, first published by Mr. Fleeming Jenkin at the Aberdeen Meeting of the Association, was next alluded to. Mr. Jenkin found that the decrease of the current passing through the gutta-percha, due to electrification, was constant at all temperatures, and independent of the change of resistance due to this cause. Mr. Siemens had found the same result with the change of resistance due to change of pressure.

SATURDAY.

'Report on Luminous Meteors,' by Mr. GLAISHER.

'Interim Report on the Vertical Motion of Currents of Air,' by Prof. HENNESSY.—A portion of the 20^l. granted by the Association last year had been expended, and some work had been accomplished; but the Committee were not prepared with a Report at this Meeting.

'On a Proof of the Dioptric and Actinic Quality of the Atmosphere at a High Elevation,' by Prof. C. PIAZZI SMITH.—The chief object of the astronomical experiment on the Peak of Teneriffe in 1856 was to ascertain the degree of improvement of telescopic vision, when both telescope and observer were raised some two miles vertically in the air. Distinct accounts have, therefore, already been rendered as to the majority of clouds being found far below the observer at that height, and to the air there being dry, and in so steady a state and homogeneous a condition, that stars, when viewed in a powerful telescope with a high magnifying power, almost always presented clear and well-defined minute discs, surrounded with regularly-formed rings,—a state of things which is the very rare exception at our observatories near the sea-level. Quite recently, however, the author has been engaged in magnifying some of the photographs which he took in Teneriffe in 1856, at various elevations, and he finds in them an effect depending on height, which adds a remarkably independent confirmation to his conclusions from direct telescopic observations. The nature of the proof is on this wise: at or near the sea-level a photograph could never be made to show the detail on the side of a distant hill, no matter how marked the detail might really be by rocks and cliffs illuminated by strong sunlight; even the application of a microscope brought out no other feature than one broad, faint, and nearly-uniform tint. But on applying the microscope to photographs of distant

hills taken at a high level in the atmosphere, an abundance of minute detail appeared, and each little separate "retama" bush could be distinguished on a hill-side $\frac{1}{4}$ miles from the camera. Specimens of these photographs thus magnified have been introduced into the newly-published volume of the Edinburgh Astronomical Observations, four of them being silver-paper prints, and the fifth a press-print from a photographic plate, kindly prepared and presented by Mr. Fox Talbot.

'Description of a Solar Eye-piece invented by Mr. DAWES,' communicated and exhibited by Dr. LEE.—Mr. Dawes has introduced his admirable solar eye-piece, which possesses the advantage of being applicable to any existing telescope. The solar phenomena are, therefore, more within our ken than formerly as to their shape and habits, or successive changes, and particularly as to their effects; but their physical constitution remains unfathomable, like the question, Whence come the perpetual beams of light and heat of the orb itself? Yet these particulars, the theme of endless plausible cogitations and ingenious suggestions without proof, though still among the unrevealed mysteries of nature, may finally submit to unremitting researches. For instance, the solar spots can now be safely pronounced to be no longer an object of idle curiosity, like the casual clouds of our atmosphere. The few landmarks hitherto recorded begin to indicate a regular progress of position in them, with periodical maxima and minima in their amount. Thus, in the years 1845-46, the groups of solar spots extended to about 40° north of the Equator; and to 30° south of it, leaving a central blank band from 8° north to 5° south. This state of arrangement is now recurring, with the exception that the preponderance is at present on the south side of the equator. In 1853 and 1854, the spots were distributed from 20° north to about 20° south, decreasing in number till early in the year 1856, when there was a decided minimum, and the equatorial region remained clear; but spots appeared in both hemispheres from 20° to 40° . Their parallels are already again contracting. So much for their position, and now for their motion. Their daily drift in longitude reveals a general equatorial current 30° in breadth, in the direction of the rotation, and a reverse current of nearly the same breadth is perceptible beyond it, in each hemisphere. In the foregoing details we are greatly indebted to Mr. Carrington, of Redhill; but now we must turn to Major-Gen. Sabine, with thanks for the light that he has shed on the mysterious correspondence between the solar and the terrestrial magnetic disturbances; for a decennial period is therein indicated, as well as another connected with the earth's orbit, which brings us to the present wondrous result of well-directed investigation. Every inquiry which leads to our information respecting the physical condition of the great centre of our system is of the highest scientific value; and as there is some danger to the eye in closely watching the solar spots, facule, luminous strata and other phenomena under a hot glare, every invention to prevent injury while scrutinizing the sun, is both useful and valuable. Urged by necessity, the Rev. Mr. Dawes planned an eye-piece which, under his direction, was constructed by Mr. Dollond. Its peculiarity consists in having a metallic slide, with perforations of different sizes, which crosses the eye-tube at right angles, just at the focus of the object-glass; and though the slide is greatly heated while viewing the sun, the conduction is cut off by interposing a plate of ivory. The perforations vary in diameter from 0.5 to 0.0075 of an inch. Moreover, as observed in the 'Speculum Hartwellianum' (p. 28), this admirable eye-piece possesses the advantage of being applicable to any existing telescope. The indefatigable inventor has now constantly used it during a period of upwards of ten years, with success, and most interesting results, as to a luminous stratum on the solar disc, and the rotation of a remarkable spot through an arc of 100° in six days! Solar investigations are, therefore, more within our reach than formerly, especially as photography and practical philosophy have brought their powerful aid to bear on the investigation.

Prof. PHILLIPS, after acknowledging the value

of the ingenious invention of Mr. Dawes, described the method by which the eminent optician Cooke had succeeded in separating the heat of the solar rays from the luminous portion before their arrival at the focus. The eye-piece constructed by him has a prism of 45° and a right angle, with one of its faces permitted to receive the light after leaving the object-glass; the luminous rays are then received on the back of the prism at a larger angle than that of total reflexion, so that fully 95 per cent. of them are reflected and pass on to the eye-piece; but the heating rays, from their having a smaller refractive index, are for the most part permitted to pass out at the back of the prism and are not reflected to the eye-piece, so that at least 95 per cent. of them are thus got rid of. By this simple contrivance the utmost comfort is secured to the observer engaged in examining the sun.

'On the Relationship between the Variation of the Eccentricity of the Earth's Orbit and the Moon's Mean Motion in Longitude,' by the Rev. Dr. E. HINCKS.—The author had found on one of the hieroglyphic inscriptions a notice of a certain eclipse of the sun, which from certain circumstances he concluded had been annular, seen at Thebes at a date which he conceived he would be able to connect with other chronological epochs. But upon calculating back by the best tables of the moon extant he found that the sun could not have risen at Thebes at the time of this eclipse. He therefore asked for the assistance of those more practically engaged than himself in astronomical pursuits in answering the following queries:—Let e_0 and M_0 be the eccentricity of the earth's orbit and the mean longitude of the moon at the beginning of 1801. Let e_t and M_t be the eccentricity and the mean longitude at the end of any time t , the longitude being reckoned from the equinox of 1801.

$$\text{Let } e_t = e_0 + e_1 t + e_2 t^2 \\ \text{and } M_t = M_0 + M_1 t + M_2 t^2 + M_3 t^3$$

It was formerly thought that $M_2 = ae_1$, and $M_3 = ae_2$; a and a_1 being co-efficients supposed to be known. Some years ago it was discovered that these co-efficients were much less than they had been supposed to be; and it was inferred that some other cause had combined with gravity to make M_2 so great as it is. Within the last year he had heard that some eminent astronomers were of opinion that e_1 was "much greater" than it had been supposed to be; but he had heard nothing precise as to its value. It had occurred to him that as M_2 had been greatly overrated by astronomers, the above equation $M_2 = ae_1$, might still hold good. On this point he desired to ascertain the opinions of the Section.

Prof. PIAZZI SMYTH said that he conceived he should best consult the wishes of Dr. Hincks and be more likely to attain the object he desired if he took time to consider and to deliberately answer the important queries he had proposed.

'On the Connexion that exists between Admiral FitzRoy's "Caution Telegrams" and the Luminosity of Phosphorus,' by Dr. MOFFAT.

SECTION B.—CHEMICAL SCIENCE.

FRIDAY.

The PRESIDENT said, the first business this morning was to receive an exceedingly important 'Report by the Committee appointed to investigate some Improvements in Gun-cotton.' It was a committee formed partly of members of the Mechanical Section and partly of members of the Chemical Section. The chemical part would chiefly occupy their attention.

Dr. GLADSTONE read the Chemical portion of the Report.—Since the invention of gun-cotton by Prof. Schönbein, the thoughts of many have been directed to its application to warlike purposes. Many trials and experiments have been made, especially by the French; but such serious difficulties presented themselves that the idea seemed abandoned in every country but one, Austria. From time to time accounts reached England of its partial adoption in the Austrian service, though no explanation was afforded of the mode in which the difficulties had been overcome, or the extent to which the attempts had been successful. The Committee, however, have been put in possession of the fullest informa-

tion from two sources—Prof. Abel, chemist to the War Department, and Baron W. von Lenk, Major-General in the Austrian Artillery, the inventor of the system. Prof. Abel, by permission of the authorities, communicated to the Committee the information given by the Austrian Government to our Government, and also the results of his own elaborate experiments. General von Lenk, on the invitation of the Committee, by permission of the Austrian Government, paid a visit to this country, to give every information in his power on the subject, and brought over drawings and samples from the Imperial factory. The following is a summary of the more important points:—As to the chemical nature of the material, Von Lenk's gun-cotton differs from the gun-cotton generally made, in its complete conversion into a uniform chemical compound. It is well known to chemists that, when cotton is treated with mixtures of strong nitric and sulphuric acids, compounds may be obtained varying considerably in composition, though they all contain elements of the nitric acid and are all explosive. The most complete combination (or product of substitution) is that described by M. Hadon as $C_{12}H_{11}(9NO_3)O_{30}$, which is identical with that termed by the Austrian chemists Trinitrocellulose, $C_{12}H_7(3NO_2)O_{10}$. This is of no use whatever for the making of colloid; but it is Von Lenk's gun-cotton, and he secures its production by several precautions, of which the most important are the cleansing and perfect desiccation of the cotton as a preliminary to its immersion in the acids,—the employment of the strongest acids attainable in commerce,—the steeping of the cotton in a fresh strong mixture of the acids after its first immersion and consequent imperfect conversion into gun-cotton,—the continuance of this steeping for forty-eight hours. Equally necessary is the thorough purification of the gun-cotton so produced from every trace of free acid. This is secured exclusively by its being washed in a stream of water for several weeks. These prolonged processes are absolutely necessary. It seems mainly from the want of these precautions that the French were not successful. From the evidence before the Committee it appears that this nitro compound, when thoroughly free from acid, is not liable to some of the objections which have been urged against that compound usually experimented upon as gun-cotton. It seems to have a marked advantage in stability over all other forms of gun-cotton that have been proposed. It has been kept unaltered for fifteen years; it does not become ignited till raised to a temperature of 136° C. (277° Fahr.); it is but slightly hygroscopic, and when exploded in a confined space, is almost entirely free from ash. There is one part of the process not yet alluded to, and the value of which is more open to doubt—the treatment of the gun-cotton with a solution of silicate of potash commonly called water-glass. Prof. Abel and the Austrian chemists think lightly of it; but Von Lenk considers that the amount of silica set free on the cotton by the carbonic acid of the atmosphere is really of service in retarding the combustion. He adds, that some of the gun-cotton made at the Imperial factory has not been silicated at all, and some imperfectly; but when the process has been thoroughly performed, he finds that the gun-cotton has increased permanently about 3 per cent. in weight. Much apprehension has been felt about the effect of the gases produced by the explosion of gun-cotton upon those exposed to its action. It has been stated that both nitrous fumes and prussic acid are among these gases, and that the one would corrode the gun and the other poison the artilleryman. Now, though it is true that from some kinds of gun-cotton, or by some methods of decomposition, one or both of these gases may be produced, the results of the explosion of the Austrian gun-cotton without access of air are found by Karoly to contain neither of them, but to consist of nitrogen, carbonic acid, carbonic oxide, water, and a little hydrogen and light carburetted hydrogen. These are comparatively innocuous; and it is distinctly in evidence that, practically, the gun is less injured by repeated charges of gun-cotton than of gunpowder, and that the men in casemates suffer less from its fumes. It seems a disadvantage of this material as com-

pared with gunpowder that it explodes at a temperature of 277° Fahr.; but against the greater liability to accidents from this cause may be set the almost impossibility of explosion during the process of manufacture, since the gun-cotton is always immersed in liquid, except in the final drying.† Again, if it should be considered advisable at any time, it may be stored in water, and only dried in small quantities as required for use. The fact that gun-cotton is not injured by damp like gunpowder is, indeed, one of its recommendations, while a still more important chemical advantage which it possesses arises from its being perfectly resolved into gases on explosion; so that there is no smoke to obscure the sight of the soldier who is firing or to point out his position to the enemy, and no residuum left in the gun, to be got rid of before another charge can be introduced.

Mr. SCOTT RUSSELL submitted the Mechanical Report, which will be found in the Saturday proceedings of Section G.

Capt. GALTON, presuming that there were yet many points that required further investigation, moved that a proposal be submitted to the Committee of Recommendations, that the Committee be requested to continue their labours for another year. He was sure that the War Office would be glad to assist as much in the inquiry as they had hitherto done.—A number of specimens of the cotton were handed round for the inspection of members and associates, and a series of simple experiments were subsequently conducted by Prof. Miller.

Prof. ABEL gave a description of the Austrian system of manufacture, as communicated to the Government of this country by the Government of Austria, and as carried out at the Imperial establishment at Kirtenberg, near Vienna.

'On Chemical Manufactures on the Tyne,' by Mr. J. C. STEVENSON.

'On the various kinds of Pyrites used on the Tyne and Neighbourhood for the Manufacture of Sulphuric Acid,' by Mr. J. PATTINSON.

SECTION C.—GEOLOGY. SATURDAY.

Mr. MULLINS read a Report of a Committee on the Distribution of the Organic Remains of the North Staffordshire Coal-Field.

'On the Chronological Value of the Triassic Rocks of Devonshire,' by Mr. W. PENNELLY.

'On the Causes of Earthquakes and Volcanic Eruptions,' by Mr. J. A. DAVIES.

'On the Physical Condition of the Earth in the Earlier Epochs of its History,' by Rev. J. BRODIE.

'On a Help to the Identification of Fossil Bivalve Shells,' by Mr. H. SEELEY.

'On the Penine Fault,' by Mr. W. BAINBRIDGE.

'On Coal in the Red Measures,' by Mr. M. DUNN.

'On the Recent Discovery of Gold near Bala Lake, Merionethshire,' by Mr. T. A. READWIN.—The discoveries of gold in Merionethshire have of late been rather frequent. In some instances the appearances have been of such a character as to justify expectations of profitable results. Last year he enumerated the gold localities of the neighbourhood of Dolgelly; now he noticed a recent discovery of gold near the beautiful lake of Bala (*Llyn Tegd*). About five miles from Bala, on the north-west side of the turnpike-road leading to Dolgelly, and about two miles from the village of Llanuchlyn, nearly opposite the western end of the lake, is a prominent hill, known as *Castell Carn Dochan*. At the top of this hill are the ruins of a castle of the olden time, and at the foot of the hill runs the swift little river *Lew* (*Avon Lew*) on its course to the lake. Geologically, the district is similar to the "Dolgelly Gold District," namely, the Lower Silurian rocks penetrated by large bosses of greenstone. The maps of the Geological Survey, LXXIV. S.W., and LXXV. S.E., show a continuation of rocks to this spot, in a north-easterly direction, of precisely the same character as at Cwmheisan,

† In ten years' experience it is proved that this temperature is sufficiently high to insure safety of manipulation; 277° Fahr. is an artificial temperature, and artificial temperatures accidentally produced are generally high enough to ignite gunpowder. The greater liability to accident from this cause can, therefore, scarcely be admitted.

Dolfrwynog, Cefn Coch, Tyddynlglwadis, &c., a distance of six or seven miles. At the *Castell Carn Dochan* mine there is one auriferous quartzose lode very remarkable. It runs nearly N.E. and S.W., and has a dip to the south. This lode is exposed to view for about twelve fathoms, showing gold in specks nearly the whole distance. The lode-stuff is for the most part free from sulphurets of lead, zinc and copper. Occasionally metallic gold is found richer than a large specimen which was exhibited. The quartz has a different appearance from that at Clogau and Dolfrwynog, and resembles more closely that at Clunes in Australia. Some boulders of quartz weighing from two to four cwt. have been broken up and found to contain visible gold throughout. The largest boulder had been built into a wall, near the spot where it had fallen. The upper portion of the lode appears to have slipped over the lower and down the face of the hill, leaving behind it a record of where it had been in characters of gold. Many tons weight of this lode-stuff have been collected, some of which has yielded gold at the rate of 18 ounces to the ton. It is interesting to notice large loose masses of greenstone lying about, having upon them incrustations of quartz, spangled with particles of gold. The *débris*, of which there is a considerable quantity, yields gold of equal value with the lode-stuff. Specimens of quartz have been found showing gold as rich as any that has been found at Clogau, where 32,000*l.* has been realized from the gold produce of less than 1,300 tons; a result, he believed, unparalleled in the world's history of gold-quartz mining. Operations have been commenced at the mine, by driving an adit into the face of the hill to cut the lode at a depth of about 20 fathoms. This level has been driven to within six feet of the lode, which, if found as rich at that depth as the sample exhibited, very probably may give as satisfactory results as the St. David's Lode at Clogau. The gold is not associated with sulphurets in excess, so that its extraction is exempted from the difficulties generally attending the various processes of amalgamation. This is an important fact, and greatly enhances the commercial value of the discovery.

SUB-SECTION D.—PHYSIOLOGY. SATURDAY.

'On the Renal Organ—these-called Water System in the Nudibranchiate Molluscs,' by A. HANCOCK.

'On the Renal Organ of the Aplysia,' by Prof. ROLLESTON.

'On Cranial Deformities, more especially on the Scaphocephalic Skull,' by Mr. W. TURNER.

'On Life in the Atmosphere,' by Mr. J. SAMUELSON.—No subject in natural history except the allied one, the origin of species, had of late excited greater interest in the scientific world than the origin of the lowest types of living beings on the globe; and although the problem was far from being solved, yet, the investigations that had accompanied the discussion had already served the useful purpose of throwing new light on the anatomy and life history of the mysterious little forms of which it treated.

It was rather with the latter object, than in the expectation of being able to assist in the solution of the general question, that he ventured to lay before the Association the results of investigations recently made. He had, for example, taken rags imported from various countries, and shaken the dust from them into distilled water, which he then exposed to the atmosphere; and after describing generally the character of the living forms he had discovered in this pure water, he stated in detail the forms of life found in each kind of dust, and among these were some new species of Rhizopoda and Infusoria, and an interesting ciliated worm-shaped form, which he believed to be a collection of the larvae of some other Infusoria. The general result of the microscopical examination of these fluids between the 27th of July and 15th of August was as follows:—In the dust of Egypt, Japan, Melbourne and Trieste, life was the most abundant, and the development of the different forms was rapid. In conclusion, he observed that if he was correct in supposing the germs of the living forms that he had described to be present in the dust conveyed by the atmosphere, and in distilled water,

it was worthy of notice that these germs retain vitality for a long period, of which he could not pretend to define the limit. In his experiments they outlived the heat of a tropical sun, and the dryness of a warm room during the whole winter; but in Dr. Pouchet's case they retained their life 2,000 years, for he obtained his from the interior of the pyramids of Egypt, and they survived an ordeal of 400° of heat. A main purpose which Mr. Samuelson had in view was to disprove the theory of spontaneous generation; and he suggested whether the great rapidity with which these germs are multiplied might not account for the spread of epidemic diseases. He did not profess to have any acquaintance with such diseases; but might it not be desirable to subject the atmosphere of hospitals to the microscopic test?

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

FRIDAY.

'A few Notes on Sir C. Lyell's "Antiquity of Man,"' by Mr. J. CRAWFORD.—I may begin at once by stating my conviction that the evidence which has of late years been adduced, giving to the presence of man on the earth an antiquity far beyond the usual estimate of it, is already satisfactorily established. There can, I think, now be no question that man was a contemporary of animals such as lions, hyenas, elephants, and rhinoceroses, extinct far beyond the reach of human record. But among the evidences brought forward to prove the antiquity of man, the paucity of relics of his own person, compared with the abundance of those the unquestionable work of his hands, have attracted especial notice. Thus, in the valley of the Somme and other places, where flint implements have been found in abundance in the same drift with the bones of the extinct elephant and rhinoceros, not a single bone of a human skeleton has yet been discovered. The scarcity of human remains compared with those of the lower animals may, I think, be to some extent accounted for. In the savage state, man is ever few in number compared with the wild animals; and when he first appeared on earth—when naked, unarmed, without language, and even before he had acquired the art of kindling a fire—the disparity must have been still greater. In that condition, he would have to contend for life and food with ferocious beasts of prey, with nothing to depend upon but a superior brain and the capacity of wielding a club. In such circumstances, the wonder is, not that he should be few in number, but that he should have been able to maintain existence at all. Sir C. Lyell adopts the theory of the unity of the human race which, no doubt, best accords with the hypothesis of the transmutation of species, one with which I cannot agree, although I gladly would, were I guided only by the regard I entertain for its ingenious, candid and highly-gifted author. Neither Sir C. Lyell nor any one else has ventured to point out the primordial stock from which the many varieties which exist proceeded. The Ethiopian represented on Egyptian paintings four thousand years old is exactly the Ethiopian of the present day. The skeleton of an Egyptian mummy of the same date does not differ from that of a modern Copt. A Persian colony settled in Western India one thousand years ago, and which have rigorously refrained from intermixture with the black inhabitants, are not now to be distinguished from the descendants of their common progenitors in the parent country. For three centuries, Africans and Europeans have been planted in almost every climate of the New World and its islands; and, as long as the races have been preserved pure and unmixed, there is no appreciable difference between them and the descendants of their common forefathers. In the same manner, the human skeletons found in the pile buildings of the Swiss lakes, and computed by some to be twelve thousand years old, differ in no respect from those of the present inhabitants of Switzerland. If the existing races of man proceeded from a single stock, either the great changes which have taken place must have been effected in the locality of each race, or occurred after migration. Now, distant migration was impossible in the earliest period of man's existence. Man must have acquired a considerable measure of civilization—that is, he must

have domesticated some animals for food and transport, have cultivated some kind of corn, and have provided himself with arms of offence and defence—to enable him to undertake even long land journeys, while the physical geography of the world forbids the possibility of distant sea voyages, which would imply the possession of strong boats or ships, with some skill in navigation, and therefore a still greater advance in civilization. With the exception of a few inconsiderable islands, every region has, within the historical period, been found peopled, and usually with a race peculiar to itself. The peopling of these countries by migration must have taken place in very rude times; and in such times nothing short of a great miracle could have brought it about. It is only within the last three centuries and a half that the existence of half the inhabitants of the world became known to the other half. But for one race of men more highly endowed than the rest, the different races of mankind would now have been unknown to each other. It is this superior race which still keeps them in mutual acquaintance, or at least in intercommunication. I conclude, then, that there is no shadow of evidence for the unity of the human race, and none for its having undergone any appreciable change of form. If one thousand years, or four thousand, or one hundred thousand,—supposing this last to be the age of the skeletons of the Belgian race contemporary with the mammoth,—have effected no appreciable change, it is reasonable to believe that multiplying any of these sums by a million of years would yield nothing but the same cipher. Sir C. Lyell has adopted what has been called the Aryan theory of language, and fancies that he finds in it an illustration of the hypothesis of the transmutation of species by natural selection. The Aryan or Indo-European theory, which had its origin and its chief supporters in Germany, is briefly as follows:—In the most elevated table-land of Central Asia there existed, in times far beyond the reach of history or tradition, a country, to which, on very slender grounds, the name of Aryana has been given, the people and their language taking their name from the country. The nation, a nomadic one, for some unknown cause betook itself to distant migrations; one section of it proceeding in a south-eastern direction, across the snows and glaciers of the Himalayas, to people Hindūstan, and another in a north-westerly direction, to people Western Asia and Europe, as far as Spain and Britain. "Before that time," says Prof. Max Müller, the most recent expounder of the theory, "the soil of Europe had not been trodden by either Celts, Germans, Slavonians, Romans, or Greeks"—an assertion which can be interpreted to signify only that Europe at least was, before the supposed migration, uninhabited. According to the theory, the human skeletons found in the caverns near Liège must have belonged to the nomadic wanderers from Central Asia or their descendants; and so the era of the imaginary migration carries us back to a time when man was a contemporary of the extinct mammoth, the cave lion and rhinoceros. The entire fabric is founded on the detection of a small number of words, in a mutilated form, common to most, but not to all, of the languages of Western Asia and Europe—a discovery, no doubt, sufficiently remarkable, but clearly pointing only to an antiquity in the history of man far beyond the reach of history or tradition. A language which the theorists have been pleased to call the Aryan is the presumed source of the many languages referred to. But the Aryan is but a language of the imagination, of the existence of which no proof ever has been, or ever can be, adduced. The object of the theory would seem to be to prove that the many languages called the Aryan, or Indo-European, sprang all of them from a single source. The doctrine is extended to all the other languages of the earth, with the hope of reducing them from thousands to a very small number. The Aryan theory proceeds on the principle that all languages are to be traced to a certain residuum called "Roots." Some languages either are so, or are made to be so by grammarians. The copious Sanskrit is said to be traceable to some 1,900 roots, all monosyllables. The languages to which I have myself given special attention are

certainly not traceable to any such roots. In their simplest form, a few of the words of these languages are monosyllables, but the great majority are dissyllabic or trisyllabic, without any recondite sense whatever. But were the Aryan, or Indo-European, hypothesis as true as I believe it to be baseless, I cannot see how it illustrates, or, indeed, can have any possible bearing at all on the theory of the transmutation of species by natural selection, the progress of which is so slow—if, indeed, there be any progress at all—that no satisfactory evidence of it has yet been produced. The changes in language, on the contrary, are due to forces in unceasing and active operation, and the evidences are patent and abundant. They consist of social progress, and of the intermixture of languages through conquest, commercial intercourse and religious conversions. Sir Charles Lyell attaches more value than I can do to the fact, that philologists have not agreed as to what constitutes a language and what a dialect. Following the philosophers of Germany, his object would seem to be to reduce all languages to a small number of primordial ones, in the same manner as the authors of the theory of the transmutation of species would reduce all species to a few monads. If there were any truth in the Aryan theory, which is here again advocated, it would of necessity follow that there would be no language at all in Western Asia or Europe, ancient or modern, and that Sanskrit, Greek, Latin, with all the modern languages, would be reduced to the rank of mere dialects or subdivisions of one primordial tongue—the airy, fabulous Aryan, the mere creature of Teutonic imagination. I cannot give my belief to so monstrous a fiction, or see how it can be a parallel to the transmutation of species by natural selection. Changes in language are the exclusive work of man; those in species by natural selection, if they have any existence at all, the spontaneous work of nature, unaided by man, and in operation long before he was created.—I come now to offer a few remarks on the work of Prof. Huxley. The Professor compares man with the apes, placing them anatomically and physiologically in the same category; and here I must premise that the views which I have to offer are more of a popular than scientific character. To begin with the brain: even if there were no material structural difference between the brain of man and that of the most man-like ape, what would be the practical value of the resemblance, when the working of the two brains is of a nature so utterly different—less an affair of degree than of absolute quality? The brains of the dog and elephant bear no resemblance to the brain of man or ape, or even to those of each other; yet the dog and elephant are equal, if not, indeed, superior, in sagacity to the most man-like ape. The brain of the wolf is anatomically the same with that of the dog; but what a vast difference in the working of the two brains! The common hog is an animal of great intelligence, and wants only a pair of hands like the ape's to enable him to make a display of it equal if not superior to that of the most anthropoid monkey. Sheep and goats have brains not distinguishable; yet the goat is a very clever animal, and the sheep a very stupid one. In the dentition of man and the apes there is certainly a singular accord. The digestive organs also agree. Yet with this similarity, man is an omnivorous, and the monkey a frugivorous animal, seemingly resorting to worms and insects only from necessity. The teeth of the monkeys are more powerful, proportionally, than those of man, to enable them to crush the hard-rinded fruits on which they mainly subsist, as well as to serve as weapons of defence, for they have no other. Prof. Huxley has very satisfactorily shown that the designation of "quadrumanæ," or four-hand, is incorrectly applied to the family of monkeys. Their feet are real feet, although prehensile ones; but the upper limbs are true hands, and it is in the possession of these, far more than in a similarity of brain, that the ape approaches the nearest to man. Notwithstanding his seemingly dextrous hands, the monkey can neither fashion nor use an implement or weapon. It is his brain, anatomically so like that of a man, but psychologically so unlike, that hinders him from performing this seemingly simple achievement. All the different races of man intermix to the pro-

duction of fertile offspring. No intercourse at all takes place between the different species of monkeys. Man, of one variety or another, exists and multiplies in every climate. The monkeys are chiefly found within the tropics, and seldom above a few degrees beyond them. The natural abode of man is the level earth—that of the monkeys, the forest. Man came into the world naked and houseless, and had to provide himself with clothing and dwelling by the exercise of superior brain and hands. The monkeys are furnished by nature with a clothing like the rest of the lower animals, and their dwellings are not superior to those of the wild boar. Man has the faculty of storing knowledge for his own use and that of all future generations: in this respect every generation of monkeys resembles that which has preceded it, and so, no doubt, has it been from the first creation of the family. The special prerogative of man is language, and no race of men, however meagrely endowed, has ever been found that had not the capacity of framing one. In this matter, the monkey is hardly on a level with the parrot or the magpie. But is it true that the anthropoid apes come nearest to man in intelligence? They ought to do so, if they be the nearest grade to man in the progress of transmutation by natural selection. Prof. Huxley has fully and faithfully described four of these anthropoids; and it appears to me that, among them, those which anatomically approach the nearest to man are the least like him in intelligence. At the top of the list is the gorilla; and all we know about him is, that he is ferocious and untamable. The orang-utan, or mias, seems to me to be the nearest in form to man; but he is described as a slow, sluggish, dull, and melancholy animal. The other two species, the gibbon and chimpanzee, seem to me incomparably more lively, playful and intelligent than the more anthropoid. If, adopting the theory of the transmutation of species by natural selection, we believe the gorilla to be the next step to man in the progress of change, it must be taken for granted that the transmutation must have proceeded from the lower to the higher monkeys. Exclusive of the lemurs, there are some two hundred distinct species. Which species is at the bottom of the long scale implied by this number? and has any naturalist ever ventured to describe the long gradation from it till we reach the gorilla? How are the tailed and tailless monkeys to be classed and how are we to place the monkeys of the New World, with their four supernumerary teeth? In America there is no anthropoid monkey at all; every one has a long tail, often a prehensile one. Between man and the apes, then, in so far, at least, as America is concerned, one great link is absent. The monkeys, then, have an outward and even a structural resemblance to man beyond all other animals, and that is all; but why Nature has bestowed upon them this similarity is a mystery beyond our understanding.

A long and very sharp discussion ensued.

'Geographical Notes on the Island of Formosa,' by Mr. R. SWINHOE.

'Some Facts respecting the Great Lakes of North America,' by Mr. J. A. LAPHAM.

'On the Physical and Mental Character of the Negro,' by Dr. J. HUNT.

This paper brought up Mr. CRAFT, a negro of nearly pure black skin, in defence of his race. Mr. Craft said, that as Africans were very dark, and the inhabitants of Northern Europe very fair, and as, moreover, the nations of Southern Europe were much darker than those of Northern Europe, it was perfectly fair to suppose that climate had a tendency to bleach as well as to blacken. The thickness of the skulls of the negroes had been wisely arranged by Providence to defend their brains from the tropical climate in which they lived. If God had not given them thick skulls their brains would probably have become very much like those of many scientific gentlemen of the present day. The woolly hair was not considered by Africans as a mark of inferiority, though some of them shaved it off, but it also answered the purpose of defending the head from the sun. With regard to his not being a true African, his grandmother and grandfather were both of pure negro blood. His grandfather was a chief of the West Coast; but, through the treachery of some white men, who doubtless thought them-

selves greatly his superiors, he was kidnapped and taken to America, where he (Mr. Craft) was born. He had recently been to Africa on a visit to the King of Dahomey. He found there considerable diversities even among the Africans themselves. Those of Sierra Leone had prominent, almost Jewish features. Their heels were quite as short, generally, as those of any other race, and upon the whole they were well formed. Persons who had any knowledge of Africans knew that, when they enjoyed advantages, they were capable of making good use of them. He might refer to the instance of the little girl brought to this country by Capt. Forbes. This child was presented to the Queen, who had her carefully educated. When she grew up, she mingled in good society, and interested every one by her proficiency in music; and recently she had been married to a commercial gentleman of colour at Lagos. Another case was mentioned by Mr. Chambers in one of his works; and another case was that of Mr. Crowther, who was well known to many gentlemen in this country. One word with reference to the ancient Britons. When Julius Caesar came to this country, he said of the natives that they were such stupid people that they were not fit to make slaves of in Rome. It had taken a long time to make Englishmen what they now were, and therefore it was not wonderful if the negroes made slow progress in intellectual development. It was, however, proved that they made very rapid progress when placed in advantageous circumstances. As to the negro not being erect, the same thing might be said of agricultural labourers in this country. He pointed to Hayti as furnishing an instance of independence of character and intellectual power on the part of the negro; and contended that in America the degraded position which he was forced to occupy gave him no chance of proving what he really was capable of doing. He was sorry that scientific and learned men should waste their time in discussing a subject that could prove of no benefit to mankind. He spoke with great deference to their opinions; but, for his own part, he firmly agreed with Cowper, that

Fleecy locks and black complexion
Cannot alter nature's claim;
Skins may differ, but affection
Dwells in white and black the same.

SATURDAY.

'On some Curiosities of Physical Geography in the Ionian Islands,' by Prof. ANSTED.

'On the Central Argentine Railway from Rosario to Cordova and across the Cordillera of the Andes,' by Mr. W. WHEELWRIGHT.

'On the Physical Geography of Guatemala,' by Mr. O. SALVIN.

'On the so-called Celtic Languages in reference to the Question of Race,' by Mr. J. CRAWFORD.—There exist two living European languages which, going under the name of Celtic, are usually believed to be one tongue, or at least sister languages of one origin, and spoken by the same race of men. These are, on one hand, the native language of Ireland and of the mountainous part of Scotland, which are beyond doubt essentially the same, and the native language of Wales and Brittany—which are equally sister tongues. I have long been of opinion that the two languages in question are really different and distinct tongues. The words which seem to me most distinctly to prove languages to be cognate are prepositions, auxiliary verbs and conjunctions, adverbs of time and place,—those parts of speech, in fact, which form the links of language, and without which sentences cannot be constructed. When these are essentially the same in any two languages, these languages may be pronounced at once as sister tongues: while, when they differ, they may with equal confidence be pronounced as different tongues, or of different origin, although they may contain words in common. Tried by the test which I have endeavoured to describe, the Gaelic and Welsh languages will be found to be, not sister tongues derived from the same parent, as are Italian and French, but two distinct languages. Their particles and auxiliaries are wholly different. The phonetic character of the two languages differs very materially; and, with the exception of a comparatively small number, their words are wholly different. I have compared, with all the care I could

command, the Irish dictionary of O'Reilly with the Welsh of Spurrell. The former contains more than 50,000 words, and the latter above 33,000; and, in this multitude, I could discover not more than 200 which were common to the two languages. In nearly every case of these there was a difference in the form of the words in the two languages, and this independent of the factitious difference arising from disagreement in their orthographic systems. If the facts and arguments adduced in the course of this paper are admitted, we must come to the conclusion that the Gaelic of Ireland and Scotland, with the dialect of the Isle of Man, on one hand, are the same language; while the Welsh and Breton, with the now extinct Cornish, are essentially the same, on the other,—the two classes of languages being essentially separate and distinct. So far, then, as language can be considered a test of race, and to the extent that one European race of man differs from another, the parties speaking the two languages must be viewed as distinct original races. The difference between the two peoples in intellectual endowment may not be appreciable, any more than it is in other European races; but, physically, I think it is admitted that the Welsh are shorter in stature and darker in complexion than the people at least of the western part of Ireland, where there has been the least admixture of foreign blood.

'On Celtic Languages,' by Mr. R. S. CHARNOCK.—The author commenced by stating that having had an opportunity of reading Mr. Crawford's lecture before attending the meetings of the Association, he should reply to it in detail. Mr. Crawford stated that when between two or more languages there was a substantial phonetic or grammatical agreement they might be pronounced cognate. In the next paragraph, however, he laid down a different proposition, namely, that the words which most distinctly proved languages to be cognate were conjunctions, &c., words in fact which could not be constructed. He would not quarrel with Mr. Crawford for using the term German in describing the origin of five-sixths of our English language, when doubtless Anglo-Saxon was intended. The Norman element, instead of being one-sixth, probably did not constitute a fiftieth part of the language. On the question of grammatical structure, he combated the notion that the leading languages of Europe, ancient and modern, had all sprung out of a dead language of India, and also the proposition that the Siamese was a monosyllabic language, and contended that race could never to a certainty be determined by language. It would be considered absurd in a man who, having given cogent reasons for not visiting Rome, forthwith started for the Holy City. But Mr. Crawford, after going to the trouble of arguing that the boasted test of an agreement in the mere structural form of language is inadmissible, proceeded nevertheless to compare the Gaelic and Welsh with the view of showing that in point of structure they were entirely different languages. Again, after stating that the formation of compound words by the help of prepositions was a distinguishing characteristic of Indo-Germanic or Aryan languages, and amongst them of the Sanskrit, the Gaelic and Welsh, Mr. Crawford argued that no such manner of compounding words was known to either of these languages. This assertion was inexcusable, for if he had searched the dictionaries of the last two languages he would soon have found that in upwards of one-third of the words the first syllable was a prefix. Mr. Charnock quoted numerous instances to prove this; and then contended that the English language was not of German origin, but a language which was principally based upon Greek and Latin, derived partly through Saxon and Norman-French, and partly direct from the two former languages. After criticizing other portions of Mr. Crawford's paper, the author concluded by stating that the arguments adduced by the former were most inconclusive and illogical, and totally unworthy of the author of the very able dissertation on the Malay language.

Dr. FALCONER said that it was within his personal knowledge that Mr. Crawford had devoted himself with the most persevering care to the collection of facts upon the subject of his paper. Although an octogenarian, he had undertaken the

colossal task of searching through all the dictionaries in the Irish, Gaelic, Welsh and Armoric languages. —Mr. KILGOWER said that the different waves of languages in Great Britain had been so intermingled that it was very difficult to determine what words belonged to any particular language. He agreed that there were broad distinctions between the Welsh and Celtic races.

'On some Points in the Craniology of South American Nations,' by Mr. C. C. BLAKE.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS. SATURDAY.

Discussion on Dr. CAMPS's paper 'On the Sanitary Condition of the Troops in India.'

'On Transportation in Connexion with Colonization,' by Col. TORRENS.—Irrespective of the general policy which favours the extradition of criminals, on whatever conditions, transportation is advocated—1st, As a formidable deterrent to those lapsing into crime; 2nd, As having a reformatory influence on criminals subjected to it; 3rd, As an advantageous mode of founding new colonies. We will examine the question under each of these aspects, which, I believe, comprise every argument that can be adduced in its favour. And first, as deterrent; Capt. Gamble, Director of Convict Prisons, who has had the management of transportation to Western Australia during the last six years, informs the Commissioners that "transportation, as now conducted, has no deterring effect. You cannot make it have a deterring effect unless you increase the time which the men will have to be kept by the Government. Transportation would be a greater boon than it is now if a more rigid system was adopted in this country. Therefore, if you wish to make transportation deterrent, you must not add to the restrictions of the ticket-of-leave system at home." Sir Walter Crofton, Chairman of the Directors of Convict Prisons in Ireland, advises the Commissioners that convicts look forward with satisfaction to being sent to a penal colony; and I put it forward now to prevent the idea gaining ground that we are going to deter serious offenders by sending them to Western Australia. From the year 1788 to 1852 every conceivable form of penal discipline was tried in New South Wales, Tasmania and Norfolk Island—the road gang system, the solitary system, the separate system, the assignment system, the probation system, the Maconochie or mark system; and the result of this sixty-four years' experimenting proved an entire failure so far as regards the creation of a "formidable deterrent." Not that punishment more or less severe was not inflicted under each of these systems, but because, by a perverse ingenuity, that punishment was inflicted at the antipodes, beyond ken of those upon whom it was designed to operate as a deterrent. The farmer plants his scarecrow on the land to be protected, and not at the extremity of his farm; but we reverse this policy, and hence, as prizes in the lottery are noised abroad, while the numerous blanks are never heard of, so the criminal class received frequent reports of successes in life and fortunes realized, in some instances by honest industry, but in the great majority of cases by resumption, with improved skill and caution, of these practices, which, in the first instance, were rewarded by free passage to the land of high wages and large profits. These reports receiving confirmation by the arrival of remittances and by the return of many, bringing with them sums realized in a few years, exceeding anything that the honest labourer in this country could hope to attain by the industry and self-denial of a lifetime, it came to pass that transportation, denuded of all the terrors with which ignorance had at first surrounded it, became to many an incentive to, instead of a deterrent from, crime. It may be imagined that, profiting by this experience, some more formidable punishment would have been introduced upon the resumption of transportation in 1855. I will, therefore, as briefly as possible, describe the system pursued in the penal settlement of Western Australia. The convict, on arrival, undergoes solitary confinement, and this—the only portion of the system that can, without a gross abuse of terms, be designated formidable—is doled out

to all alike, without regarding degrees of criminality, for the uniform period of nine months. This brief period of punishment over, the convict is thenceforth in a position—having regard as well to immediate physical requirements as to future prospects—far superior to that of the honest labourer in this country. With some thirty or forty of his comrades, under the guidance of a constable, usually chosen from the gang, he is marched into the interior. There he is comfortably huddled, well clothed, and fed with abundance of bread, beef, mutton, tea, sugar, &c., varied occasionally by game of his own taking or procured from the natives. The daily labour is light—not more than is calculated to promote healthy digestion and sound sleep. The evenings are passed agreeably around the camp-fires with pipes and tea, “the cup which cheers but not inebriates,” whilst some bold cracksmen recount his deeds of burglary and violence, stirring the spirit of his auditors to emulate his doings; “and oft the merry song goes round, and oft the jest.” Nor is imprisonment lost sight of in those hours of relaxation. The garrotter’s handicraft is playfully exhibited in the harmless practical joke, and the exquisitely delicate touch of the professional pick-pocket is kept in practice by abstracting pebbles, deposited for that purpose in his neighbour’s pouch. Col. Henderson simply enough describes this phase of convict life in his reply to query 2447:—“Yes, they do prefer it; they have a greater swing; discipline is less severe, and there is less routine: they like that sort of free-and-easy life better.” But, alas! all human joys must end. After a couple of years or so of this “free-and-easy life,” the third stage commences, and our convict has again imposed upon him the anxieties and responsibilities of taking care of himself. He is thrown upon his own resources as a ticket-of-leave man for the space of one to four years, according to his original sentence, with the restriction that he must not roam beyond the limits of his police district, comprising an area larger than Yorkshire, and cautioned against exposing himself to the night air after ten o’clock. To console him under these restrictions, he is assured that in case of sickness he will be supplied with medical aid and maintained at the expense of the mother country; and that he may obtain employment “at far higher wages than those of the honest labourer of this country, may soon raise himself, become the employer of labour, and the owner of flocks and herds.” During this stage a liberal Government will, in compliance with his request, send out his wife and children at the cost of the mother country. Or he may, if he prefers it, leave them to be supported by his parish in the old country. Bachelor convicts are supplied with wives at the Government expense; and all the convicts are protected from annoyance by an Act of the Colonial Legislature, making it penal to speak disparagingly of the convict status in presence of a conditionally-pardoned or ticket-of-leave man. After a couple of years spent under those not very grievous restraints, our convict obtains a conditional pardon. Exposure to the night air will no longer be dangerous—he is free to range beyond the not very narrow limits of his police district, or, should he prefer it, to remove to the adjacent colonies, where the cities of Adelaide, Melbourne and Sydney afford an ample field for the practice of his former profession, and where, if he has acquired wealth and is a clever fellow, he may get into Parliament, and possibly become one of Her Majesty’s ministers. The notorious criminal Redpath, sentenced for life for offences committed under all the concomitants that can aggravate crime and render it inexcusable, arrived in Western Australia on the 23rd of November, 1853, and was discharged on ticket-of-leave on the 3rd of June, 1861. During the interval, two years and a half, with the exception of the nine months’ initiatory stage of solitary confinement, he was employed as a clerk in the Government offices, and thenceforth was enabled to live in luxury and affluence. As stated by Capt. Kennedy, “there is very little shame attaching to his status.” At the expiration of four years he will be permitted to go where he pleases out of England, freed from even the figment of restraint to

which he is at present subject. Assuredly such a system as this fails in the primary requirement of all punishment, and is rather a premium on crime. The reformation of the criminal, though a secondary, is nevertheless an important consideration in determining the eligibility of any punishment; and in this respect the absence of anything really formidable in transportation, as at present conducted, is sufficient of itself to insure failure: except by fire, the precious metals are not refined from the baser alloy—except by suffering, the moral nature is not purified from the contamination of guilt. The reformatory element must be sought for, if at all, in the concomitant circumstances of transportation. We will consider these. During the four months’ voyage to Western Australia discipline is of necessity relaxed. Criminals are herded together without discrimination, and the unfortunate man who in a moment of temptation has given way to passion contrary to the general turn of his character, is associated with the reprobate hardened by a life of crime and debauchery. This debases the comparatively pure. To counteract this, on the arrival of the convict, recourse is had to solitary confinement. Ere the counteracting influences of solitary confinement have had time to operate upon the moral constitution, the convicts are again herded together, freed from all but nominal restraint, to lead that “free and easy life” in the interior, referred to by Colonel Henderson. Surely no man, whose mind is unbiassed by interest or by official predilections, would predicate “reformatory tendency” of such a system as this. But on this point we have actual results before us. In 1838, after transportation had been fifty years in operation, rumours of fearful demoralization reached this country. Archbishop Whately, in the Lords, and Sir William Molesworth, in the Commons, forced an investigation, and the disclosures of depravity engendered by the system were so revolting as to render its abandonment imperative. Transportation to New South Wales was at once suspended, and a new experiment in penal discipline introduced in Tasmania and Norfolk Island. This scheme, though it had some philosophical appearance, instead of promoting reformation amongst the convicts, drove them into a state of chronic revolt, in which the ticket-of-leave men became the terror of the community; and at length the further sustentation of the system became impossible, when, in 1846, the colonists of Tasmania threatened to leave the island in a body unless transportation were abandoned. The revolting character of the details recorded in the report of the committee of 1838 on transportation, make it practically a sealed book. In the general ignorance upon the subject, the criminal extrusionists again prevailed; and in 1855 transportation was revived, Western Australia being selected as the site where, ignoring experience, the experiment was to be repeated. The fruits of the system there have not yet had time to become “rotten ripe.” It has, no doubt, “wherever its corrupting influence extends, deteriorated the morals of the officers.” Its exhalations sufficed to taint the moral atmosphere of the adjacent colony of South Australia to such an extent that, within three years after the renewal of transportation, over 1,000 conditionally-pardoned and ticket-of-leave men found their way from Western Australia to Adelaide. I held the commission of the peace there at the time, and can indorse the testimony given by Mr. Brewland, the police magistrate, respecting the rapid increase of violent assaults, robberies, and burglaries, crimes theretofore little known amongst us. These samples of the reformatory influence of transportation went about in gangs at night, stopping and plundering the citizens, our expenses in police and jails were seriously increased, great alarm and excitement were created, until we passed the Extradition Act, condemning to three years’ penal servitude every convict found in the colony after a prescribed day. The effect was immediate, and convictions which, prior to that act, had risen to 1 in 1,000 of the inhabitants, fell, in the next year, to 1 in 2,000. The commissioners had evidence of the effects experienced in this country from the transportation system. The Rev. J. Davis, twenty years Ordinary at Newgate,

informs them that the effect produced by the association of prisoners is very bad and very prejudicial. The change from associated imprisonment to solitary confinement makes an immense difference. The thieves of London were more under the direction of the returned convicts formerly than they are under the direction of the ticket-of-leave men now. The proportion of men who, after undergoing penal discipline under the English system, return to bad courses, is fewer than it used to be under the transportation system. In conclusion, he expressed his belief that the extension of the transportation system in Western Australia would be an injury to the colonists which they would be sure greatly to feel, and which it was possible they might resent.

‘On the Mortality of Lancashire, &c., during the year ended at Midsummer, 1863,’ by Mr. F. PURDY.—This was a continuation of the paper which the writer brought before the Section at Cambridge. The Cotton Famine was felt in several of the Lancashire Unions through a marked increase in pauperism at the beginning of 1862. It increased till the Midsummer following, when the distress had assumed most serious proportions, which continued to augment still more rapidly up to December, when the maximum of destitution was reached; thence to Midsummer last it has steadily declined, leaving, however, in the Unions principally affected, a rate of pauperism which is between three and four times their normal proportion. The deaths in Lancashire, during the year ended Midsummer, were compared with the average of the three years ended at Midsummer, 1862. The average was 61,263; last year’s deaths 64,828, being an increase of 3,565, or 5·8 per cent. No attempt was here made to correct the figures for the increase of population. A similar comparison was made for three contiguous divisions—Yorkshire, where the deaths were respectively 46,454 and 49,955, being an increase of 3,501, or 7·5 per cent.; the rate of increase was here larger than in Lancashire,—the Northern division, deaths 25,499 and 26,876, which showed an increase of 1,377, or 5·4 per cent., very close to the Lancashire rate of increase,—and the North Midland division, deaths 26,578 and 25,181, which showed a decrease of 1,397, or 5·3 per cent. Limiting the inquiry to the principal cotton manufacturing Unions, properly so called, a group of sixteen was formed of the most distressed. The two first belong to Cheshire, the others to Lancashire. They are the Unions of Stockport, Macclesfield, Wigan, Bolton, Bury, Chorlton, Salford, Manchester (with Prestwich), Ashton-under-Lyne, Oldham, Rochdale, Haslingden, Burnley, Blackburn and Preston. The average number of deaths in the three years was 43,152, and the deaths in the year ended Midsummer last, 43,951, that is to say, an increase of 799, or 1·9 per cent., as compared with the average. But it was found, on correcting the numbers with respect to the increase of population, that the average should be 42,353, the deaths for the year ended Midsummer last, 41,574; this then, exhibited, instead of an increase, a decrease of 779 deaths, or 1·8 per cent. The sixteen unions were then arranged in three sections, as in the Cambridge paper. Section A. contained 7 unions, which, at Midsummer, 1862, were least pauperized, the increase of pauperism as against 1861, was at that time 34 per cent. in the lowest burthened, and 100 per cent. in the highest. It was shown by comparison of the deaths in the year ended Midsummer, 1863, with the average of the three preceding years, that Wigan, Chorlton and Oldham had increased 8·7, 13·9, and 16·9 per cent. respectively; that Macclesfield, Salford, Bolton and Bury had decreased 5·0, 0·9, 2·2 and 4·1 per cent. respectively. Section B. consisted of 4 unions, the increase of pauperism at Midsummer, 1862, varied in this section from 120 to 145 per cent. The deaths in Manchester (with Prestwich), had increased 2·7 per cent. The others had decreased: Rochdale, 6·6 per cent.; Burnley, 16·0 per cent.; and Haslingden, 1·6 per cent. Section C. was formed of 4 unions; the pauperism had increased from 283 in the lowest union to 453 per cent. in the highest. Stockport had increased in deaths 12·0 per cent., and Ashton-under-Lyne, the most distressed union in the whole district, judging by the numbers on

the books of the relieving officers and of the Relief Committees, 3·9 per cent. In the Preston Union there was a decrease of 8·7 per cent. in the deaths. This union felt the distress earlier, and till it was surpassed by Ashton, heavier than any other. Last autumn typhus fever prevailed at Preston. Dr. Buchanan, the Government Inspector, who visited the district, reported the fever as "the steady follower on famine," and gave, it may be remembered, a very gloomy account of the physical depression of the unemployed operatives generally; yet in the very year of this fever, which soon disappeared, there were 256 less deaths in the union than on the average of the three preceding years. Blackburn, also a very distressed union, shows a slight decrease of mortality. Liverpool, though the largest cotton port in Europe, has been but slightly affected by the cotton famine; the pauperism there is, and has been, but little in excess of its usual amount. It has not been found necessary to institute any Relief Committees. Nevertheless, the increase in the death-rate there has been very great. The average number of deaths in the three years was 8,198; in the year ended Midsummer 1863, it was 9,475, being an increase of 1,277, or 15·6 per cent. In the contiguous Union of West Derby, the deaths were respectively 4,915 and 6,199, increase 1,284, or 26·1 per cent. These figures present a remarkable contrast to the average death-rate of the Cotton Manufacturing Unions during the same period. Mr. Purdy observed that the increase of mortality in the Manchester, Ashton-under-Lyne, Chorlton, Oldham, and Wigan Unions appeared from the Registrar's Returns to have been caused by the prevalence of epidemics in those districts, especially from scarlatina, diphtheria, measles, and small-pox. The decrease of deaths in the other Unions has been attributed by various Registrars to the generally temperate state of the weather; to the change from employment in the atmosphere of the mills to the open air; and to the greater maternal care bestowed upon the younger children. The possible saving of life from the last-named cause may be very great indeed when it is remembered that *one-half* of the large mortality of the Lancashire towns is usually that of children under five years of age.

'Remarks on Native Colonial Schools and Hospitals, from the Sanitary Statistics of Miss Florence Nightingale,' by Mr. J. HEYWOOD.

'Statistics of the Tanning Trade of Newcastle-upon-Tyne' (communicated by James Potts), by the late T. C. ANGUS.

SECTION G.—MECHANICAL SCIENCE.

SATURDAY.

'On the Prevention of Fouling of Ships' Bottoms,' by Dr. WHITE.

At the last Meeting of the British Association a joint Committee from the Chemical and Mechanical Committees was formed to inquire into and report on the Austrian gun-cotton. The Reports from the two sections of this Committee were read this day. Dr. W. H. GLADSTONE read that relating to the chemical portion of the subject, which we have already reported in Section B. for Friday.

Mr. J. SCOTT RUSSELL read the Report on the mechanical portion of this question, by which it appears that greater effects are produced by gases generated from gun-cotton than by gases generated from gunpowder, and it was only after long and careful examination that the Committee were able to reconcile this fact with the low temperature at which the mechanical force is obtained. The great waste of force in gunpowder constitutes an important difference between it and gun-cotton, in which there is no waste. The waste in gunpowder is 68 per cent. of its own weight, and only 32 per cent. is useful. This 68 per cent. is not only waste in itself, but it wastes the power of the remaining 32 per cent. It wastes it mechanically, by using up a large portion of the mechanical force of the useful gases. The waste of gunpowder issues from the gun with much higher velocity than the projectile; and if it be remembered that in 100 lb. of useful gunpowder this is 68 lb., it will appear that 32 lb. of useful gunpowder gas is wasted in impelling a 68-lb. shot composed of the refuse of gunpowder itself. There

is yet another peculiar feature of gun-cotton. It can be exploded in any quantity instantaneously. This was once considered its great fault; but it was only a fault when we were ignorant of the means to make that velocity anything we pleased. General von Lenk has discovered the means of giving gun-cotton any velocity of explosion that is required by merely the mechanical arrangements under which it is used. Gun-cotton in his hands has any speed of explosion, from 1 foot per second to 1 foot in $\frac{1}{1000}$ of a second, or to instantaneity. The instantaneous explosion of a large quantity of gun-cotton is made use of when it is required to produce destructive effects on the surrounding material. The slow combustion is made use of when it is required to produce manageable power, as in the case of gunnery. It is plain, therefore, that, if we can explode a large mass instantaneously, we get out of the gases so exploded the greatest possible power, because all the gas is generated before motion commences, and this is the condition of maximum effect. It is found that the condition necessary to produce instantaneous and complete explosion is the absolute perfection of closeness of the chamber containing the gun-cotton. The reason of it is, that the first ignited gases must penetrate the whole mass of the cotton, and this they do, and create complete ignition throughout, only under pressure. This pressure need not be great. For example, a barrel of gun-cotton will produce little effect and very slow combustion when out of the barrel, but instantaneous and powerful explosion when shut up within it. On the other hand, if we desire gun-cotton to produce mechanical work, and not destruction of materials, we must provide for its slower combustion. It must be distributed and opened out mechanically, so as to occupy a larger space, and in this state it can be made to act even more slowly than gunpowder; and the exact limit for purposes of artillery General von Lenk has found by critical experiments. In general, it is found that the proportion of 11 lb. of gun-cotton, occupying 1 cubic foot of space, produces a greater force than gunpowder, of which from 50 to 60 lb. occupies the same space, and a force of the nature required for ordinary artillery. But each gun and each kind of projectile requires a certain density of cartridge. Practically, gun-cotton is most effective in guns when used as $\frac{1}{4}$ to $\frac{1}{2}$ weight of powder, and occupying a space of $\frac{1}{16}$ th of the length of the powder-cartridge. The mechanical structure of the cartridge is of importance as affecting its ignition. The cartridge is formed of a mechanical arrangement of spun cords, and the distribution of these, the place and manner of ignition, the form and proportion of the cartridge, all affect the time of complete ignition. It is by the complete mastery he has gained over all these minute points that General von Lenk is enabled to give to the action of gun-cotton on the projectile any law of force he pleases. Its cost of production is considerably less than that of gunpowder, the price of quantities which will produce equal effects being compared. Gun-cotton is used for artillery in the form of a gun-cotton thread or spun yarn. In this simple form it will conduct combustion slowly in the open air, at a rate of not more than 1 foot per second. This thread is woven into a texture or circular web. These webs are made of various diameters, and it is out of these webs that common rifle cartridges are made, merely by cutting them into the proper lengths, and inclosing them in stiff cylinders of pasteboard, which form the cartridges. (In this shape its combustion in the open air takes place at a speed of 10 feet per second.) In these cylindrical webs it is also used to fill explosive shells, as it can be conveniently employed in this shape to pass in through the neck of the shell. Gun-cotton thread is spun into ropes in the usual way up to 2 inches diameter, hollow in the centre. This is the form used for blasting and mining purposes; it combines great density with speedy explosion. The gun-cotton yarn is used directly to form cartridges for large guns by being wound round a bobbin so as to form a spindle like that used in spinning-mills. The bobbin is a hollow tube of paper or wood, the object of the wooden rod is to secure in all cases the necessary length of chamber in the

gun required for the most effective explosion. The gun-cotton circular web is inclosed in close tubes of india-rubber cloth to form a match line, in which form it is most convenient and travels with speed and certainty. In large quantities, for the explosion of mines, it is used in the form of rope, and in this form it is conveniently coiled in casks and stowed in boxes. As regards conveyance and storage of gun-cotton: it results from the foregoing facts, that 1 lb. of gun-cotton produces an effect exceeding 3 lb. of gunpowder in artillery. This is a material advantage, whether it be carried by men, by horses, or in waggons. It may be placed in store, and preserved with great safety. The danger from explosion does not arise until it is confined. It may become damp and even perfectly wet without injury, and may be dried by mere exposure to the air. This is of great value in ships of war, and in case of danger from fire, the magazine may be submerged without injury. As regards its practical use in artillery, it is easy to gather from the foregoing general facts how gun-cotton keeps the gun clean and requires less windage, and therefore performs much better in continuous firing. In gunpowder there is 68 per cent. of refuse, or the matter of fouling. In gun-cotton there is no residuum, and therefore no fouling. Experiments made by the Austrian Committee proved that 100 rounds could be fired with gun-cotton, against 30 rounds of gunpowder. From the low temperature produced by gun-cotton the gun does not heat. Experiments showed that 100 rounds were fired with a 6-pounder in 34 minutes, and the gun was raised by gun-cotton to only 122° Fahrenheit, whilst 100 rounds with gunpowder took 100 minutes, and raised the temperature to such a degree that water was instantly evaporated. The firing with the gunpowder was, therefore, discontinued; but the rapid firing with the gun-cotton was continued up to 180 rounds without any inconvenience. The absence of fouling allows all the mechanism of a gun to have much more exactness than where allowance is made for fouling. The absence of smoke promotes rapid firing and exact aim. There are no poisonous gases, and the men suffer less inconvenience from firing in case-mates, under hatches, or in closed chambers. The fact of smaller recoil from a gun charged with gun-cotton is established by direct experiment: its value is $\frac{2}{3}$ of the recoil from gunpowder, projectile effect being equal. To understand this may not be easy. The waste of the solids of gunpowder accounts for one part of the saving, as in 100 lb. of gunpowder 68 lb. have to be projected in addition to the shot, and at a much higher speed. The remainder, General von Lenk attributes to the different law of combustion. But the fact is established. The comparative advantages of gun-cotton and gunpowder for producing high velocities, are shown in the following experiment with a Krupp's cast-steel gun, 6-pounder. With ordinary charge 30 oz. of powder produced 1,338 ft. per second. With charge of 13½ oz., gun-cotton produced 1,563 ft. The comparative advantages in shortness of gun are shown in the following experiments, 12-pounder:—

| | Calibres. | Charge. | Velocity, feet per second. |
|-------------------|-----------|------------------------|-------------------------------|
| Cotton, length 10 | 15·9 | oz. | 1,426 |
| Powder, " 13½ | 40 | (normal powder charge) | 1,400 |
| Cotton, " 9 | 17 | " | 1,402 |

—As to advantage in weight of gun, the fact of the recoil being less in the ratio of 2 : 3 enables a less weight of gun to be employed, as well as a shorter gun, without the disadvantage to practice arising from lightness of gun. As regards duration of gun, bronze and cast-iron guns have been fired 1,000 rounds without in the least affecting the endurance of the gun. As regards its practical application to destructive explosions of shells, it appears that from a difference in the law of expansion, arising probably from the pressure of water in intensely-heated steam, there is an extraordinary difference of result, namely, that the same shell is exploded by the same volume of gas into more than double the number of pieces. This is to be accounted for by the greater velocity of explosion when the gun-cotton is confined very closely in very small spaces. It is also a peculiarity that the stronger the shell the smaller the frag-

ments into which it is broken. As regards mining uses, the fact that the action of gun-cotton is violent and rapid in exact proportion to the resistance it encounters, tells us the secret of its far higher efficacy in mining than gunpowder. The stronger the rock, the less gun-cotton, comparatively with gunpowder, is necessary for the effect; so much so that while gun-cotton is stronger than powder as 3 to 1 in artillery, it is stronger in the proportion of 6-274 to 1 in a strong and solid rock, weight for weight. It is the hollow-rope form which is used for blasting. Its power of splitting up the material is regulated exactly as wished. As regards military and submarine explosion, it is a well-known fact, that a bag of gunpowder nailed on the gates of a city will blow them open. In this case gun-cotton would fail. A bag of gun-cotton exploded in the same way is powerless. If one ounce of gunpowder is exploded in scales, the balance is thrown down; with an equal force of gun-cotton nothing happens. To blow up the gates of a city a very few pounds of gun-cotton, carried in the hand of a single man, will be sufficient, only he must know its nature. In a bag it is harmless; exploded in a box it will shatter the gates to atoms. Against the palisades of a fortification: a small square box containing 25 lb., merely flung down close to it, will open a passage for troops; in actual experience on palisades a foot diameter and 8 feet high, piled in the ground, backed by a second row of 8 inches diameter, a box of 25 lb. cut a clean opening 9 feet wide. To this three times the weight of gunpowder produced no effect whatever, except to blacken the piles. Against bridges: a strong bridge of oak, 24 feet span, was shattered to atoms by a small box of 25 lb. laid on its centre; the bridge was not broken, it was shivered. As to its effects under water: in the case of two tiers of piles, in water 13 feet deep, 10 inches apart, with stones between them, a barrel of 100 lb. gun-cotton, placed 3 feet from the face and 8 feet under water, made a clean sweep through a radius of 15 feet, and raised the water 200 feet. In Venice, a barrel of 400 lb. placed near a sloop in 10 feet water, at 18 feet distance, threw it in atoms to a height of 400 feet. All experiments made by the Austrian Artillery Committee were conducted on a grand scale,—36 batteries, six and twelve pounders (gun-cotton) having been constructed, and practised with that material. The reports of the Austrian Commissioners are all based on trials with ordnance, from six pounders to forty-eight pounders, smooth bore and rifled cannon. The trials with small fire-arms have been comparatively few, and are not reported on. The trials for blasting and mining purposes were also made on a large scale by the Imperial Engineers' Committee, and several reports have been printed on the subject.

Sir WM. G. ARMSTRONG said it was impossible to listen to the report which had been read without being very much impressed with the great promise there was of gun-cotton becoming a substitute for gunpowder; but at the same time there were certain peculiar anomalies about it which he certainly should like to have cleared up, and until they were, they could not feel that perfect confidence in the results that they wished to do. In the first place, with regard to the heat evolved, they were told that, with such a quantity of gun-cotton as would produce a given quantity of gas, a certain initial velocity was imparted to the projectile, and that the heating effect upon the gun was much less than when a similar velocity was produced by an equivalent quantity of gunpowder. The absence of heat in the gun implied an absence of heat in the gas. Where was the projectile force to come from, if there was no heat in the gas? He could not, for his part, conceive how it was possible of explanation. The next point that occurred to him was with regard to the recoil. It was stated that the recoil was very much less. That was ascribed to the absence of solid inert matter in the charge, which, in gun-cotton, was next to nothing. If the recoil was only two-thirds that of gunpowder, it would require, in order to account for that difference, a much larger quantity of solid matter than there really was in the case of gunpowder. The report stated that the use of gun-cotton enabled them to reduce the length of the gun. It was

quite certain, however, that with a short gun they could not get an equal initial velocity as with a long gun. If the initial velocity were increased there was more danger of bursting the gun than with gunpowder. Because if they got any velocity, or an equal velocity with the shorter gun, it must be concluded that it was done by virtue of a greater initial pressure and an earlier action upon the shot. That necessarily implied a greater strain upon the gun at the first explosion, and that would necessitate the employment of stronger guns. He should have expected a smaller velocity by a shorter gun, for the action of the gas was necessarily shorter than in a longer gun. The heat question, however, was to him the greatest puzzle of all. How they could have the propelling power without heat in the gas, and if they heated the gas, how they escaped heating the gun, he could not understand.—Prof. POLE said he was quite unable to give any explanation of the difference of recoil. If the shot left the gun with the same velocity as when fired with gunpowder, it was natural to suppose that there must be the same quantity of recoil.—Mr. SIEMENS having briefly spoken on the dynamical question involved in the matter, suggested that the greater heat imparted to the gun in the case of gunpowder might be owing to the greater amount of solid matter, which taking up the great heat of the gases under a pressure of some 400 atmospheres imparted a portion of the same by radiation to the side of the gun, while in the case of gun-cotton gases only were produced, which could only impart heat to the gun by the slower process of conduction, and left a larger margin of heat to be developed in force by expansion.—Admiral Sir E. BELCHER thought that the reason the gun was not heated by an explosion of gun-cotton might be because the gases had not time to heat the gun owing to the rapidity of the explosion, which was slower in the case of gunpowder; or that it might arise from the greater amount of fouling in the case of gunpowder.—Capt. MAURY said this Report was something more than interesting, because it was so exceedingly suggestive; and it appeared to him that it afforded them an element of security by giving the preponderance on the side of defence. Ever since steam had been applied to purposes of naval warfare it had been considered a matter of very great doubt by many professional men how far ordinary steamers and men-of-war, where forts were to be passed at the mouth of a river, were capable of sustaining the fire of such forts and passing up the river. And to show that there was ample time for them to do so, they had only to recollect the fact of steamers having fought forts for several hours. In the Crimea and at Charleston the steamers had remained under fire for several hours—a much longer time than was necessary to enable them to pass the forts and go higher up the river into a place of safety where they could do damage to the enemy. Iron-clads had rendered this much more easy than it had previously been. If then their principal defences failed them at the mouth of a river in this way, the question was whether they should not have recourse to mining for the destruction of the invading vessels? He himself had been engaged upon the subject. He found this difficulty in employing gunpowder, that in order to be sure of destroying the vessel as she passed in a given line by means of gunpowder, the magazines must be in actual contact, or very nearly in actual contact with the side of the vessel; otherwise the probability was that the vessel would not be destroyed. Last week they had the intelligence of a vessel having had a mine exploded under her on the James River. That magazine contained several thousands of pounds of powder. The vessel did not know that the mine was there; but the mine did not destroy the vessel. It merely threw up a column of water, which washed some of the men overboard. His own conclusion was that to make sure of destroying a vessel after she had passed the forts, they must mine the channel in such a manner that the vessel must come in contact with one or other of the mines. It was found that wooden vessels to contain the powder would not do. They would not confine the powder long enough to produce a sufficient force. It was necessary to make them of stout boiler-iron. It would not do to leave the magazines on the top of

the water, and it would not do to put them at the bottom, for then there would be a cushion of water between the bottom of the ship to be destroyed and the magazine, which would protect the vessel. In short, they had to anchor them beneath the surface with short buoy-ropes, at a depth proportioned to the kind of vessel expected to come up. But when they made the magazine of boiler-iron they had to have buoys to float it so large that they were always in danger of being carried away by the vessels crossing the line of magazine. The plan was to place those magazines in a ring in such a position that the vessel in passing would have to come in contact with at least one and probably two of them. It was necessary to place those magazines of powder so that when you saw the vessel in that range you had only to bring the two poles of the galvanic battery together and make the explosion. There was, as already stated, a difficulty in using gunpowder. But since gun-cotton had the remarkable effect of destroying a vessel—he did not know her strength—at a distance of 18 feet, and that not vertically, but laterally, the question arose whether they might not fortify and protect those channel ways by placing a ring of gun-cotton magazines along the bottom; but, at any rate, if that was not necessary, they could float them at any depth, and out of reach of the vessels generally using the channel. That appeared to him to be one of the most important uses of gun-cotton, and it was one which would give safety to cities which were some distance from the mouths of navigable rivers. He trusted that in the event of the Committee continuing their labours, they would address their attention to this important point.—Admiral Sir E. BELCHER stated that the explosion of powder under water was once done under one of his own vessels to clear away ice. He placed it upon the ground, thinking that its explosion would blow the ice clear of her bows without touching the vessel. There was, however, sufficient water to form a cushion, and when the explosion took place it only produced a great wave upon which the vessel rose.—Prof. POLE said what they wanted was something to show the varying pressure of the gases in the gun; in fact, an indicator diagram.—Mr. J. SCOTT RUSSELL set himself to clear away the many difficulties which attended this very difficult subject. How was it that in gunpowder and in gun-cotton where there were equal quantities of gas put in, the gas in the case of gunpowder was raised to an enormously high temperature, and came out at an enormously high pressure, showing that they had gas enormously expanded by heat; whereas in the case of gun-cotton the gas came out quite cool, so that you might put your hand upon it, and the gun itself was quite cool? He (Mr. Russell) had a theory. Steam was a gas, and steam expanded just by the same laws as other gases did. A great deal of the gas of gun-cotton happened to be steam. Let them conceive 100 lb. of gun-cotton shut up in a chamber that just held it. They had got there all the gases that had been spoken of, but they had also got 25 lb. of solid water—about one-third of a cubic foot of water—in that chamber. What did they do with it? They put fuel, they put fire to it. They heated the whole remaining pounds of patent fuel. If, then, they considered the gun-cotton gun as the steam-gun, they got rid of two difficulties. They would have, first, the enormous elasticity of steam; and secondly, they would get the coolness of it. They all knew that if they put their hand to expanded high pressure steam, it had swallowed up all the heat and came out quite cool. He believed that the gun-cotton gun was neither more nor less than Perkins's old steam-gun with only this difference, that you bottled up the fuel and water, and let them fight it out with each other. They did their work and came out quite cool. He hoped, however, that it was understood that he did not dogmatize. He put all he had said with a note of interrogation upon it.—Prof. TYNDALL said he thought that a note of interrogation ought to be put to what Mr. Russell had said.

The subject is considered of so much importance that the British Association, though it has re-appointed the Joint-Committee to continue its inquiries, has passed a resolution to urge on the Government the appointment of a Commission by

means of which a more complete investigation, and such as the subject unquestionably deserves, may be made than the means at the disposal of the Association will admit of.

FINE ARTS

FINE-ART GOSSIP.—We are happy to state that the scheme for holding an exhibition of stained-glass, alluded to in the *Athenæum* some weeks since, has taken a concrete and practical form. The Science and Art Department invited the leading firms engaged in the production of stained glass to meet at South Kensington, and explained to their representatives the nature of the plan and its means of carrying it out. The Department proposes to hold the exhibition in a gallery in the west wing of the South Kensington Museum, which contains fifteen windows, each 11 feet high, by 4 feet 9 inches wide, and could, if necessary, apply the windows of a gallery adjoining that in question to the same purpose. The manufacturers present unanimously accepted the offer, and agreed that the period of the exhibition should be regulated by that of the Royal Academy. Messrs. T. Gambier Parry and R. Burchett were appointed an executive committee on behalf of the exhibitors, to conduct the necessary arrangements in concert with the Department. The following are the names of the firms represented at the meeting:—Messrs. T. Baillie & Co., H. M. Barnett, Chance Bros. & Co., Clayton & Bell, Cox & Son, Evans, Field & Allan, J. A. Forrest, C. Gibbs, Hardman & Co., Lavers & Barraud, Morris, Marshall, Faulkner & Co., O'Connor, J. Powell & Sons, F. Preedy, Pilkingtons, Ward & Hughes, J. P. Warrington, and W. Warrington.

The memorial to the late Lady Canning, designed by Mr. G. G. Scott, has been erected over her grave. It is of Sicilian marble, composed of a massive plinth supporting a coffin-shaped, horizontal slab, the top of which is wrought with a floriated cross; a shield of arms is placed on either side of the stem of the cross. At the head of the tomb a tall stone rises, wrought at the top into a richly-carved cross, having an appropriate inscription beneath it.

The Chancellor of the Exchequer has promised, if his engagements permit, to lay the first stone of the Wedgwood Memorial at Burslem, on the 20th of October. The Committee of Council contribute 500*l.* in aid of the building. The Potteries district has honoured itself by taking up the fame of its great benefactor in a thorough way. The recently-placed statue of Wedgwood, by Mr. Davis, is, we are glad to see, only an instalment of gratitude.

The impregnability of Blue-Books is proverbial, yet it is true that all readers of those compositions—we can hardly call them publications—aver that in them lie unsunned treasures of thought, suggestion and observation derived from the experience and wisdom of men well acquainted with the subjects upon which they give evidence, which treasures do not often get disinterred. The Royal Academy Commission Report is full of these suggestions—and we shall now and then call them. Mr. Watts suggests (section 3134) that the Royal Academy should, by way of developing taste, do something towards placing before the eyes of the public at large the best specimens of Art. He thinks, and we with him, that the decoration of public schools, for instance, might be taken in hand by the Royal Academy, and his suggestion as to the manner of doing this is eminently practical. It might offer, the artist says, during the vacation at Eton, for example, to cause to be painted by its students such works as Flaxman's classical designs, which are not to be surpassed in Art, noble amongst the noblest English works, and very interesting to the scholar. The Academy finding within its walls many able students might thus employ them, at a very small cost, to place before the eyes of scholars at public schools works which could not fail to give them a noble idea of Art.

A memorial, consisting of an obelisk eight feet high, surmounted by a Maltese Cross, is to be erected by public subscription to John Hampden,

in the field at Stoke Mandeville, where the first assessment for ship-money was made. An inscription, as follows, will be placed on the cross:—"For these lands, in Stoke Mandeville, John Hampden was assessed in twenty shillings, ship money, levied by command of the King without authority of law; the 4th of August, 1635. By resisting the claim of the King in legal strife he upheld the rights of the people under the law, and became entitled to grateful remembrance. His works on earth ended after the conflict in Chalgrove Field, the 18th of June, 1643, and he rests in Great Hampden Church." We may record this as a singular improvement in taste over the fact that several professed lovers of Hampden did not scruple to dig up a body they believed to be his and mutilate it, in order to decide how he was killed.

The Cathedral at Tuam, one of the most interesting of the ecclesiastical buildings in Ireland, and claimed by the national antiquaries as peculiarly important in the history of Hibernian Art, is to be restored, at a cost estimated at 3,000*l.*

The Lord Lyon King-at-Arms has complained to the authorities of Glasgow Cathedral that the heraldry of certain coats-of-arms recently placed in the windows of that edifice is incorrectly emblazoned. The Lyon's powers to cause correction or removal of such blunders are beyond challenge, but he exercises them with kindness. We rejoice to see that heraldic blundering, very commonly the result of charlatanism, is thus exposed. Critics lament that a very large portion of the numerous works in stained glass placed in Glasgow Cathedral are of the transparency sort, and therefore offensive to common sense and the laws of Art; also that, with an English school of glass-stainers, competent and deserving encouragement, Munich glass has been used, the distinguishing sin of which is a total miscomprehension of the true function and character of the art.

The memorial to Mr. Mulready alluded to in our last is to consist of a tablet on his tomb at Kensal Green, and to be supplemented by a statue in the National Gallery.

The guide-books are unreasonably silent as to some of the minor antiquities of the ancient city of Wells. We shall offer a welcome contribution to new editions of those volumes by calling attention to the interesting hospital founded by Bishop Bubwith, of Wells, whose splendid shrine, or chantry, in the Cathedral has a wide renown. In this hospital are to be found several of the mediæval arrangements of like establishments; the common room for the inhabitants, with the ancient forms or stools that have been used since the foundation, massive blocks mounted on short legs, also the curious chapel, with a wooden screen, of perpendicular character and simple form. The most interesting piece of furniture in the house is a painted chest, preserved in the committee-room, and used, we believe, to hold deeds and papers of accounts. This is decorated with red and white roses on a dark ground, figures and quaint inscriptions signifying the devotion of the hospital to the use of the poor. As a fifteenth-century work, evidently in its original state, the coffer is curious.

The South Kensington Museum has just acquired, by purchase, a bas-relief in marble, representing the Virgin and Child, very admirably carved and full of the sweetness and somewhat archaic grace of the school of Donatello; if not by the master himself, this has certainly been produced under his inspiration. The same establishment has obtained a life-size head, in marble, much resembling that of the statue of David by Michael Angelo, which is remarkably beautiful and perfect in preservation. The surface, which is intact, indicates the teaching and system of a noble school, decidedly that of the master named, if it be not produced by his own hand.

The work of "restoration" that gives so much cause for regret to our archaeologists and architects, and has been the ground for remonstrance with the French authorities, proceeds thoroughly with the Church of Notre Dame, Paris. Carvers are restoring hands, heads, noses, ears, fingers, toes, &c., to the statues on the Port du Zodiaque of that cathedral.

MUSIC AND THE DRAMA

THE SWANSEA EISTEDDFOD.—An *Eisteddfod*, so long an entertainment with which whimsical ideas of local pride and pedigree, and of efforts to bring to life that which Time and Change have made perish have been associated in the minds of Englishmen, may apparently now, if judiciously managed, become an object of interest to those who have small reverence for rose, thistle, shamrock or leek, if the same vegetable product be used as a type or badge of exclusiveness; yet who enjoy individuality all the more in proportion as they deprecate bigotry. In stating this hope, we must here limit it to Music; since with the antiquarian, philological and economical duties and gains of such a Festival, wrapped up as they largely are within the fetters of a difficult language, which few beyond the pale of the Principality will care to break, we will not pretend to intermeddle. Peace be to the memory of most of the long orations, too thickly larded with assumptions and compliments to be healthy or to exercise much wholesome influence! With the teaching of those who preach prejudice to prejudice we can feel small sympathy. Among the speeches we heard, the speech of the Mayor of Swansea, on the third morning, is to be remembered, as succinct, cordial and to the purpose; yet more the discourse delivered by the Bishop of St. David's on the fourth morning, which was admirable for the true catholicity of its spirit, for the largeness of the views set forth, and for the gentlemanly humour of the illustrations by which they were recommended. We will not trust ourselves with more than a single glance at the puerile fopperies of making Druids in broad-cloth and Ouates in crinoline. In spite of such nonsense, beyond which Cambrian sense would do well to advance as far and as fast as possible, it is obvious that, without any depreciation from that which is commendable in all local festivities, where the inhabitants of one town, or shire, or group of shires conspire to amuse and interest themselves with that which is their own special product, these Welsh meetings have widened in their scope. North and South have this year come together. Their managers have been compelled to profit by some experience of Saxon doings and gains. Though the pertinacious may not like to admit the fact, it is nevertheless true, that men of the soil have gone out into England and Europe, and, without their hearts in the least losing hold of the old country, have been leavened with ideas of progress—ideas which will bear fruit more or less in proportion as they are adopted by that self-knowledge which turns every material to its best account, because it does not demand either from the past or the future that which is unattainable. To come to our special subject, the immense movement in the cause of choral music, which has made itself felt in every corner of England during the last thirty years—which now exhibits in London (thirty years ago dependent on Lancashire) its thousands of pure and skilled voices—which has rendered possible and easy such a demonstration as the one in Peterborough Cathedral, of which it was a pleasure to speak not many weeks ago—which has quickened the country of John Knox into other forms than the grim and judicial psalmody of the Kirk,—has stirred Wales also. And timidly, as might be expected from innovators afraid of venturing a step beyond the traditions of Hoel and Taliesin, and of offering any rivalry to the indigenous harp (which as played indigenously is only an instrument of puny and limited musical value), but judiciously, a chorus—a real people's chorus, made up of workers in the mine, in the forge, on the farm,—has been employed, so as to give these Festivals a value to outside folk far beyond that of mere ostentatiousness. The force convened at Swansea comes strictly within this description. The voices were four hundred in number; and possibly as many more might have been gathered, but for the unfortunate propensity of parish to set itself against parish, or choir to decline junction with choir—the same which, for the time present, has destroyed the harmony of the Yorkshire Musical Festivals. Some of the singers who were assembled at Swansea are very young; but their united tone was sweet and fresh without thinness. The *soprani* in particular were very good. The central group or

nucleus belonging to Swansea, round which gathered the choirs from Aberdare, Merthyr Tydvil, Dolgellau, and other places, was well conducted by an amateur gentleman, Dr. Evan Davies, who has given much time and energy to the task, and with a very satisfactory result. Coming as the choirs composing this chorus did from separate places, and general rehearsal being thereby rendered all but impossible, they could only in their present state, for the most part, be judiciously employed in simple music. That the old harmonized melodies of Wales lend themselves willingly to such a purpose, we Londoners know. Still, new compositions were produced by two natives of the Principality—Mr. Brinley Richards and Mr. John Thomas, whose harmonized Welsh airs are most effective. The most elegant, and not the least sterling, side of our sedulous pianist's talent as a composer is shown in his vocal music. We have not forgotten his music to Herrick's 'Litanie.' His Prince of Wales's melody has gone through England; but we like far better his setting of Joanna Baillie's delicious words, "Up, quit thy bower," as a terzett; his part-song, "Sweet day, so cool, and calm and bright"; and, best of all, his sacred song, 'The Pilgrim's Path,' which is graceful and holy, and was very beautifully given by Miss Edith Wynne. This young lady, we repeat, may stand in the very first class of British singers, if she please to practise, without forcing, her sympathetic and charming voice. No one of her far more practised countrywomen sings with a purer articulation or more real expression. Her sister, Miss Kate Wynne, too, has a good *contralto* voice, also in need of complete training.

On the evening of Thursday week, the announcement of the new *Cantata* by Mr. John Thomas, to words by the gentleman whose Welsh style and title is *Talhaiarn*, drew together an enormous audience—upwards of eight thousand people, it is said, having been present; not a few of whom forced an entrance into the building. This was too frail to endure anything like surcharge or panic among those who occupied it; and at an early period of the evening a serious alarm took place—the building, in fact, being pronounced unsafe, and the inlets and outlets to it insufficient. Any catastrophe, however, was averted by the firmness of the Mayor, who recommended and enforced the dispersion of the assembly.

'Llewelyn,' produced on the next evening, is the most important new composition hitherto written for one of these meetings, being rather beyond than within the average length. It is composed for a quartett of *voixes*—at Swansea represented by Miss Edith Wynne, Miss Watts (a beginner of local celebrity, with a fine voice, who has here, by the way, won a scholarship entitling her to London tuition), Messrs. Wilbye Cooper and Lewis Thomas, and a chorus, and, at present, is written for an accompaniment of harps, pianoforte and wind instruments. The Welsh poem is by "Talhaiarn," translated by Mr. Oliphant. There is little in the subject to tempt a musician. Without any English narrowness, one may well become tired of hearing of the patriotic antagonisms betwixt Celt and Saxon, breathed in high strains, but illustrating no great event; and, with every hopeful wish for the happiness of our young royal pair, an *à propos* to the marriage of a Prince of Wales has hardly now much novelty as closing a poem. By way of an episode, the ballad of 'Gelert's Grave' is introduced. As the *Cantata* stands, though the verse is smooth and flowing, it is too long. There is much to praise in the music by Mr. Thomas: some of his choral effects are melodious and effective, because broadly simple without flimsiness. A duett for *soprano* and tenor, a very good chorus of male voices, with tenor *solo*, are the best numbers. But it is curious (and should be instructive as a comment on the untenable fancies of such as conceive it possible to keep Welsh music stationary) that Mr. Thomas, besides preferring English words, has written in the southern rather than in the national style. He might have learnt his art at the feet of Bellini and Donizetti rather than at those of the bounteous old melodists of the Principality whose remains form a group which is almost unique in national music. Even

his tune to the Gelert legend, in twelve verses (the length of which might have been disguised by setting them in pairs) is not Welsh in style. On the choral execution of the work it would not be fair to lean too heavily, the composition being more elaborate than any to which this promising chorus, as yet only a step beyond infancy, has bent itself. Some of the numbers went very well; in others there was great uncertainty. As a whole, the *Cantata* is worthy of repetition—we hope in London,—that is, if repetition is to imply (as we hope it will) re-consideration.

Among other leading musical features of the Festival, must not be overlooked the good pianoforte and harp-playing by Messrs. Brinley Richards, John Thomas and Chatterton; the efficient aid of Mr. Wilbye Cooper and Mr. Lewis Thomas; and the appearance of Miss Freeth. This young lady, as pianist, besides abundant execution and a clear and expressive touch, has more real style, originality, and consequently attraction for us, than any of her English sisterhood. She ought to be more frequently heard in public—wanting merely, as she does, that perfect command of the instrument only to be gained by habit of constant appearance, with which no pianist (least of all one of her sex) can dispense.

The enjoyment of the regular concerts, as they may be called, was a thing good to see; and very droll and hearty it was to hear how the nightingales with unpronounceable names were *invited* (with a royalty of command) to sing something in Welsh, after they had sung in Saxon, by a large part of their audiences. The morning competitions, at what may be called the sectional meetings, were still more peculiar. Choir sang against choir for prizes, even as they do at the German meetings of part-singers, and though bickering there may have been beneath the surface, among managers and those who would fain manage, among the competitors themselves hearty, honest, good feeling seemed, with little exception, to be the rule. One idyllic contest was peculiar—a prize offered to the best *contralto* voice, the exhibition being made in 'The Blackbird,' a lovely melody from the collection of Miss Jane Williams, of Aberpergwm. Four candidates, all of them obviously belonging to the humbler class of society, presented themselves to sing without accompaniment, with an earnestness and absence of coquetry, for the power to attain or to simulate which many a *prima donna* would gladly sacrifice the best of her bracelets. The voices of all the four had promise, and a sort of family likeness one to the other in their generic sweetness. One voice among them would repay any care or culture, supposing its owner (which, of course, such a competition afforded no means of judging) to possess intelligence corresponding with her vocal endowments. On the third morning, three *soprani* appeared in a similar competition, 'The Rising Sun' being the air chosen. They were all out of tune on precisely the same notes. After them, a very young girl presented herself, with a most beautiful voice, and singing in an artless and natural manner, which promises much for her future. The *Penillion* singing (a sort of improvisation), on which faithful Cambrians lay such stress, is virtually little more wonderful than a trick which any ready versifier having a musical ear might easily acquire. Neither can we think the old triple harp of the country more worthy of being perpetuated in this generation, than would be the virginals for which Dr. John Bull wrote as precursor of the pianoforte. The brass-band contest on the third morning offered so little matter for praise as to be felt among the tedious superfluities of the meeting.

This Swansea performance, to close our notes on its music, was, in most respects, calculated to raise that much—and not unjustly—decried institution, the *Eisteddfod*, in the estimation of all who are capable of comparing and thinking, and who can accept more operas than 'Don Juan,' and oratorios more modern than 'Elijah.' No doubt there were mistakes. It is a grave one for the Cambrian musicians, whether creative or executive, to run on so few tunes as they do, for it is allowing the world falsely to imagine that their land is poor in melody. 'Of

a noble race was Shenkin,' and 'Ar hyd y nos,' or 'The Vale of Towy,' and 'The Ash Grove,' 'The Power of Love,' 'The Blackbird,' and 'Merch Megen,' form capital airs. 'The March of the Men of Harlech,' if it do not "lick the 'Marseillaise' into fiddle-strings" (as we were politely assured is the case by an *ad captandum* speaker whom his flatteries of his own country-folk seem to have made a sort of oracle), is still a superb tune. But the same superb tune repeated in three different forms during one act of a concert, after having been played twice a day for three days running, ends in becoming tiresome. And the above are not the whole stock, no, nor the hundredth part of the equally noble tunes of Wales, North and South. Then the comfort of the *solo* performers, in every respect, had been overlooked. From the mere inattention to such a detail as providing sufficient copies of the music to be sung, more than one piece missed its effect; and one local singer, whom it was obvious every one desired to produce favourably, as a child of the neighbourhood, was all but compromised. For veterans of known reputation these checks are of no consequence: but to those who require kind construction as beginners they may be fatal. Once more, while we would have these meetings made self-supporting and self-reliant, and encouraged to owe their principal pleasure and profit to Welsh things done by Welsh people among Welsh people—since only thus can their character be kept up—it is surely dangerous to lavish so much indiscriminate enthusiasm, here, there and everywhere—so much bombastic reciprocal flattery—as seems to be the formula in respect to every person and product of local growth, ancient or modern. The leek, whether traditional or of to-day, has many leaves, some dead as well as some living.

The Pavilion, where the performances were held, was, as regarded its interior, one of the most slight, and perhaps the largest, temporary music-hall we have seen, not forgetting those of Bonn (for the Beethoven Fest) and Düsseldorf; it was built, on hire during the week, for this Festival, at a very moderate cost. Five, generally six, thousand persons attended the evening concerts; an audience proportionately less (seeing that busy men find it hard to play or to work at speeches and science in the morning) frequented the orations and the competitors in the early part of the day. The flag and garland decorations of the hall and its galleries were bright and effective. The platform was hemmed with clever busts of Cambrian celebrities by Mr. Davis. The lighting (gas-lighting) was perilously liberal, seeing that the means of access to and egress from what was virtually a deal shed were cruelly insufficient; and that, with every conceivable will on the part of all concerned to make every guest comfortable, the arrangements to facilitate the placing of a large audience were confused and awkwardly carried out—a matter of no slight consequence to a public largely composed of pedestrians, however good-humoured, and during days of such woeful, drenching rain as the first days at Swansea. The alarm which might have preluded a grave calamity, and thus cast a woeful terror over every thought connected with this Festival, is ascribable to the causes mentioned; and these could have escaped the observation of no one familiar with large gatherings, and what is necessary for their accommodation.

The financial result seems to have satisfied as much as surprised those who have interested themselves on the occasion. They have, therefore, every reason to take to heart every error that may have this year chanced from commission or omission, with a view to avoiding the same in 1864, at Llandudno, where the Bards of North and South Wales have appointed to hold their next *Eisteddfod*.

As postscript to the above notes on an interesting and peculiar meeting, it may be told that a roomy music-hall is in process of erection at Swansea, to be completed by the close of this year.

SADLER'S WELLS.—This theatre has now opened for a legitimate season under the direction of Miss Marriott, whose management commenced on Saturday with Mr. Lovell's play of 'Love's Sacrifice.' In order to give full effect to the performance,

Mr. Henry Marston was engaged to support the character of *Matthew Aylmer*, and was received by the audience with enthusiasm. In his performance of the part he was careful to justify the plaudits he had experienced, and he acted throughout with force and feeling, as well as with that dignity which belongs to the school in which he has studied. The manner of the Kembles has in him its apparently ultimate illustration. In the more emotional scenes of the part, Mr. Marston evinced a depth of feeling to which the audience consciously responded. The other characters of the drama were respectably filled. Indeed, Miss Marriott, in the part of *Margaret*, was not only forcible, as might have been expected, but truly and naturally passionate, giving free way to her impulses rather than attempting artificial declamation. Miss Mandelbert, also, as *Hermine*, was spirited and hilarious, and carried the audience with her in her merry scenes. The *Manou* of Mrs. H. Wallis was effective, while in Mr. George Fisher, as *Jean Ruse*, Lafont's clerk, she found a clever coadjutor. Lafont himself, perhaps the most telling character in this singular drama, was very efficiently impersonated by Mr. W. D. Gresham. Mr. Edmund Phelps was lively in *St.-Lo*, and Mr. Henry Haynes impressive as *Eugène de Lorne*. *De Lorne* himself, disguised as Friar Dominic, was rather heavily interpreted by Mr. T. B. Bennett, whom we have seen to more advantage. After the drama followed the National Anthem, and an address in comic rhymes, abounding in odd double endings, written by Mr. Burton, was delivered by Miss Marriott. The evening's entertainment concluded with the musical drama entitled 'Of Age To-morrow.' Mr. Edmund Phelps enacted *Baron Frederick*, who disguises himself as four characters, and in all gave evidence that he is an improving and rising actor.

PRINCESS'S.—Mr. Montgomery having persevered in his management of this theatre has now appeared in many Shakesperian characters, and has added to his repertory those of 'King John,' 'Richard the Third,' and 'Macbeth.' In all he has shown the same average degree of talent and neatness, and the skill which makes the most of moderate powers of execution. His *Macbeth*, indeed, had many points of merit, and in the last act manifested unexpected force and vigour. The farce of 'The Rough Diamond' has nightly followed the leading dramas, and served to bring under our notice Miss Lizzie Harrison as *Margaret*, a part which she cleverly impersonates. The same piece also introduces to us Mr. Sefton Parry, from the Cape of Good Hope Theatre, as *Cousin Joe*. Mr. Parry is evidently an experienced actor, and assumed the rustic manner with an ease, and made its broad comic qualities tell with a power, which commanded the laughter of the audience. As a low comedian, Mr. Parry has few superiors.

OLYMPIC.—The Polytechnic ghost is now to be witnessed everywhere, and it was not to be expected that the management of this theatre would entirely neglect the invention. But they have preferred a slight burlesque on the subject to a regular introduction of the scientific apparatus. Mr. Tom Taylor has accordingly furnished them with a sort of burletta, in which the old-fashioned ghosts of the stage are brought into a churchyard at midnight, where *Professors Kepper* and *Quirks* are supposed to be roaming in search of spirits. Here we have *St. Agnes*, *Hamlet*, *Banquo*, and a score others, who sing or spout, and perform many grotesque tricks; until Shakespeare appears and rebukes them in a set speech, condemning bad actors and second-rate playwrights, and ending with recommending the scientific inventions of modern times. Mr. Taylor has had a difficult theme to treat.

MUSICAL AND DRAMATIC GOSSIP.—This has been the week of the Worcester Festival. Of the effect produced on Thursday by Herr Schachner's oratorio—the first attempt at a new serious production, made during many years past, at the meeting of the Three Choirs—we may speak on Saturday next. The performance of this oratorio is reported not to have been so much a case of selection by the Committee, as of speculation by

the composer or his friends, who may be said to have purchased its production by the administration of liberal guarantees.

There is to be a Choral Festival in York Minster, we presume after the fashion of that at Peterborough, on the 13th of next month. There was, not long since, a meeting of the kind in Hereford Cathedral, at which 382 voices sang. These are signs of the musical as well as the ecclesiastical times, arguing that sacred and service music,—which, though perpetually confounded, are in some points totally distinct,—may be coming together in our minsters under conditions altogether new to England. If the movement be kept clear of archaeological pedantry and sectarian intolerance, it will prove of great importance to the spread of serious Art in this country. Meanwhile, it indicates an amplitude and development of resource such as the Masons and Swards, who cared for our service music at the time when oratorios in cathedrals were most in request, never dreamed of. Mendelssohn's 'Antigone' music has been given at the Crystal Palace. Mr. Martin's choir of many choirs is to sing there this day week.

The subscribers to the Sacred Harmonic Society will be glad to hear that the difference between Mr. Sims Reeves and its Committee will end by his re-appearance there during the coming oratorio season.

Mr. Mellon's concerts approach their close. Among other music of importance given by him, has been a selection from 'Acis and Galatea': the 'Faust' arrangement nightly.

Mdlle. Tietjens has returned from Paris, without, apparently, being engaged at the Grand Opéra. It now seems,—from concurrent testimony which has arrived from every side, public and private,—that, while she was received in 'Les Huguenots' with all courteous attention, as one trying a difficult enterprise (her *Valentine*, however, being by much her best character), the vocal inequalities of her style,—arising, we fear, from imperfect German training, did not pass unperceived in the Rue Lepelletier. Of these we were aware, when hearing her in Vienna, with Madame Czillag. There was then time to have corrected them, had not immoderate praise done its usual work, giving its victim reason to believe that there was nothing to amend—nothing to be added. In this chorus we have never joined. The same fate attended the lady in Naples as has befallen her in Paris. No one having ears could question the natural force and fine quality of her voice; but it is no case of coterie-spite or national jealousy to repeat, that the executive power of the organ has never been developed, and that the instrument itself is already impaired by constant wear and tear. The best friends of Mdlle. Tietjens would be those who encouraged her to take these truths to heart—hard though the task may be, now that her ears are filled to overflowing with peans, which have hailed her as one without a fault. It will soon be too late.

To the list of the artists engaged at the Paris Italian Opera, which has already been given, may be added the names of the sisters Marchisio and Madame Gassier,—of Signori Baraghi, Musiani and Pagans among tenors (Signor Tamberlik not returning),—of Signori Agnesi and Giraltoni among baritones,—and of Signori Antonini and Bouché among basses. The new operas promised are Signor Verdi's 'Simon Boccanegra,' and 'La Forza del Destino.'

The Théâtre Lyrique at Paris opened its season on the 1st, with the version of 'Le Nozze di Figaro.' The coming opera by M. Bizet is called 'Les Pêcheurs de Perles.' Two new singers, M. Imael and Mdlle. de Miesen are to appear in it. After that is to come 'Les Troyens.'

Dr. Nohl, already known in Germany by his writings on music, advertises himself as busied on a life of Beethoven, and invites any one who has anything to say to send information to him at No. 4, Schillergarten, Munich. Some time has elapsed since similar publicity was given to a request by Mr. Trayer, the American collector, whose materials, when he was in England, were understood to be all but complete, and whose collections were rare and extensive beyond all precedent. What has become of his work?

Dr. Liszt, who is still at Rome, has lately (say

the foreign journals) composed a Hymn for St. Cyril's Day—St. Cyril being the Slavonian apostle,—which was performed in the Church of San Girolamo degli Schiavoni.

There is no laying by Art for a real artist. It is only the artisan who slackens in his love and interest because years go on, and when it becomes dignified for him no longer to be perpetually forward in the arena of exhibition and competition. One foreign holiday-keeper writes of an organ concert given for a charitable purpose at Loschwitz, a village on the Elbe-side, by Prof. Moscheles, who has been "summering" there. Another speaks in high praise of a set of songs just composed by Madame Viardot to Russian words, which will also appear in a French and German translation.

The "patent Ghost" has introduced a new feature into our play-bills. Mr. Simpson, a local manager of known enterprise, announces that he has bought the "exclusive right" of the spectral illusion for Birmingham.

MISCELLANEA

Pig and Whistle.—In the review of 'The History of Christian Names,' *Athenæum*, No. 1870, p. 265, occurs the quotation—"The Danish *pige* (a girl), the word that has suffered that startling change in the sign of the Pig and Whistle, once the *Pige Washael* (the maiden's greeting), i. e., the salutation of the Blessed Virgin." Now, apart from the strangeness of mixing Danish and Anglo-Saxon (there is no authority for such Anglo-Saxon word as *piga*, and the Icelandic is *pika*), and the fact that there is no remnant of *pig* as a girl in our language, the sign admits of a much simpler explanation. The word *Pig* formed the subject of a paper by Mr. H. N. Sealey, before the Somerset Archaeological Society, in 1859, and he adopted the same explanation. He also said that Oldmixon, a native of Bridgewater, in his 'History of England' (1730), noticed the *Pig Cross* and the *High Cross* in his account of the siege of Bridgewater by the Parliamentary forces in 1645. The *Pig Cross* was not far from the parish church, dedicated to the Virgin, and Mr. Sealey conjectures that *Pig Cross* was Our Lady's Cross. He also mentions places called *Pig's Hill* and *Pig's Ditch*, to which he applies a like explanation. But the Danish for the Virgin is not *pigen*, but *jomfruen*, and the Icelandic is *jónfrú*. It would have been about as reverent to call the Virgin *pigen* as to call her "Our Girl" instead of "Our Lady" in English. The following seems to be the correct explanation:—In Scotch *pig* is the common word for an earthenware vessel; and the *pig-market* is the part of the market where crockery is sold. The word appears in English *viggin*, Scotch *piggin* (a milk-pail), Gaelic *pige* (an earthen jar), English *pitcher* and *beaker*, old French *picier*, old High German *pehhar*, Italian *biechiere*, mediæval Latin *bicarium* or *picarium*, and Greek *ῥίκος* (in Herodotus, i. 194, probably an earthen jar). *Pig* is therefore a *pot* or *potsherd*. *Whistle* is also a Scotch word for small change, which may be related to the German *Wechsel* in a remote degree (the Anglo-Saxons wrote *wriæt*). Thus, Burns, in his Epistle to John Rankine (quoted by Jamieson under *Quhiesel*), says—

Some auld-us'd hands had ta'en a note
That sic a hen had got a shot;
I was suspected for the plot;
I scorn'd it to lie;

So gat the *whistle* o' my groat,
An' pay't the fee.

That is, "I got the change for my money, or the punishment for my misdeeds." "Small change" is, of course, looked upon with contempt. "I don't care a brass farden for you," says the Englishman.

The swats sæ ream'd in Tammie's noddle,
Fair play, he car'd na dells a boddle,
says Burns, a boddle being two pence Scots, or one-sixth of a penny English. In the same poem he uses the parallel expression—

The storm without might rair and rustle,
Tam didna mind the storm a *whistle*—
that is a *boddle*, as before. *Pig* and *whistle* were thus names of potsherds and small, worthless cash. "To go to pigs and whistles" might mean precisely the same as our "going to *pot*." Jamieson shows that this phrase actually existed in Scotch, and

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quotes the following passages, but evidently misunderstands the meaning of the "whistle," for he says: "perhaps q. 'gone to shreds,' nothing remaining but what is of no use but to be *playthings* for children?"—

The bag-ge'en fell ahnt
And couldn't stand;
So he to pigs and whistles went,
And left the land.

The *Har'st Rig*, stanza 48.
The Nebuchadnezzar was a *gane to pigs and whistles*, and driven out with the divors bill to the barren pastures of bankruptcy. —The *Entail*, l. 9.

—The second part of the phrase here well explains the first. Now, the inn sign may have been a piece of landlord's facetiousness, adopting the well-known phrase of "Pig and Whistle," with a covert allusion to the pig (jug) of beer and whistle (change) for the customer. On the other hand, it may have only been the application of a familiar phrase for some unfamiliar words, like the *Bell and Savage* for the *Belle Sauvage*. But that phrase could scarcely have been one which could scarcely have been written, as *Pige Washael*. It is useless to conjecture further back. Corruptions are historical facts, and not to be guessed at. If it could be shown that such a sign as *Pige Washael* ever occurred that would settle the question, but then it could only have been an archaic way of saying

Here's a health to all good lasses,
without the slightest allusion to the Virgin. *Pig Cross* may have been an earthenware cross, or even a brick as opposed to a stone cross, or a cross where the pig (crockery) market was held. *Pig's Hill* may have been a sort of Monte Testaccio. Or in *Pig's Hill* and *Pig's Ditch*, and even in *Pig Cross*, the word might mean swine, as usual. Any other meaning would require documentary evidence.

ALEX. J. ELLIS.

The Queen's English.—Allow me one brief reply to "Purley," and, so far as I am concerned, this discussion ends. By "physical geography" is meant "natural" as distinguished from "political" geography. It describes the surface of the earth and the natural operations occurring on it. How that surface has been formed by the past action of these operations, it is the province of geology to tell us. Recent inquiry among the hills of Yorkshire and Northumberland confirms my belief that in the North of England the word "watershed" is a common popular term used by shepherds, miners, bailiffs, land-surveyors and engineers, from time immemorial. It is no more a translation from the German than the word "fell" for a long flat-topped height. Cross Fell has been known by that name for centuries. In the softer counties of the south, many of the good old English words for features of ground are forgotten, but "torr," "scaur," "lowe," "cleugh," "deme," "beck," are genuine English words, as well as "fell" and "watershed," whether or not they may chance to have been adopted by classic authors, or found their way into dictionaries. But I find that here they retain the primary meaning of the word "shed," to divide or separate. I was told, only last evening, at dinner, by two ladies of Newcastle, that it was a common phrase as applied to the hair, in the sense of parting it,—not parting with it. One young girl would say to another "You have not shed your hair properly"; or, "The shedding of your hair is not straight." A kind Scotch correspondent has informed me that the word is used in the same sense in Scotland, and every one here seems amused at the idea of there being any question about such a common word as "watershed." As to the pronunciation of words, our only safe guide must be the "usus, quem penes arbitrium est, et juss, et norma loquendi." The "usus" that I met with always taught me to pronounce the words as if spelt "diocese" and "diocesan," and equally to call it metamorphosis, and not metamorphosis. In words which are seldom used, the law of use cannot be very strong. In such cases it seems to me to be quite legitimate to fall back on the old or original use as our best guide. J. BEETE JUKES.

TO CORRESPONDENTS.—E. J. B.—D. C.—J. B. R.—H. T.—J. G. J.—V. J.—S.—W.—T. D.—received.

Errata.—P. 313, col. 2, l. 31, for "de Bièfre," read *de Bièfre*; and l. 33, for "Schömsaldt," read *Schömsaldt*.

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Choice Old Port and "Vintage" Wines 42s., 48s., 54s., 60s., 72s., 84s., 90s., 100s., 110s., 120s., 130s., 140s., 150s., 160s., 170s., 180s., 190s., 200s., 210s., 220s., 230s., 240s., 250s., 260s., 270s., 280s., 290s., 300s., 310s., 320s., 330s., 340s., 350s., 360s., 370s., 380s., 390s., 400s., 410s., 420s., 430s., 440s., 450s., 460s., 470s., 480s., 490s., 500s., 510s., 520s., 530s., 540s., 550s., 560s., 570s., 580s., 590s., 600s., 610s., 620s., 630s., 640s., 650s., 660s., 670s., 680s., 690s., 700s., 710s., 720s., 730s., 740s., 750s., 760s., 770s., 780s., 790s., 800s., 810s., 820s., 830s., 840s., 850s., 860s., 870s., 880s., 890s., 900s., 910s., 920s., 930s., 940s., 950s., 960s., 970s., 980s., 990s., 1000s.

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